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Long-distance assessment of high-risk sexual behavior: A comparative analysis of postal, telephone, electronic mail and internet administrations

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Long-Distance Assessment of High-Risk Sexual Behavior: A Comparative Analysis of Postal, Telephone, Electronic Mail and Internet Administrations

by

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APPROVAL

LONG-DISTANCE ASSESSMENT OF HIGH-RISK SEXUAL BEHAVIOR: A COMPARATIVE ANALYSIS OF POSTAL, TELEPHONE, ELECTRONIC MAIL AND INTERNET ADMINISTRATIONS

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Abstract

With the continuing improvement and development of technology, research methods have struggled to keep up with the changing times in terms of demonstrating the utility of newer technology. The development and continued improvement of the Internet presents an opportunity to explore the utility of this mode of administration for the assessment of these sensitive behaviors. This study examined the use of long-distance methods of high-risk sexual behavior assessment and compared the more traditional methods of mailed surveys and telephone interviews to newer and more technological methods of electronic mail and Internet.

Seven hundred and eighty participants were randomly assigned into four groups. Each group received the Sexual History Survey in a different long-distance assessment method (i.e., postal, telephone, electronic mail, and Internet). The four groups were compared to one another on accuracy of data, unit and item response rates, perceived intrusiveness, enjoyment of method, and use of resources.

Results demonstrate that the telephone group appeared to respond in a more socially desirable manner than the other groups in responses to high-risk sexual behavior items but demonstrated the highest unit and item response rates due to the methodology of the study and the perseverance of the principal investigator. However, the technological methods demonstrated favorable unit and item response rates when compared to the postal method. There were no group differences in perceived intrusiveness of the study, but participants did report that the technological methods were more enjoyable to take and they also demonstrated the highest amount of method loyalty when queried about method choice upon readministration. The technological methods also tended to cost the least per response received and used the least amount of the principal investigator's time to develop and

administer. Finally, the speed at which responses were received via the technological means was far superior to the rate of the traditional methods.

These findings support the use of the Internet in the assessment of high-risk sexual behaviors and also suggest that the use of the Internet may lead to more accurate responses and better data quality.

Dedication

This dissertation is dedicated to my wonderful wife, Diana. Your unwavering support and editing prowess guided me through this project until its completion. Without you, I probably would still be somewhere in my results section. May this project be an example of our teamwork as we head towards the most important project of our lives—parenthood.

Acknowledgments

A dissertation is not completed without some opportunity costs and I would like to acknowledge those that have provided support and consult to me through the development of this project, as well as those who have been patient in my absence during times of vigorous writing.

First and foremost, I would like to thank my wife, Diana. Without her support and occasional sarcastic threat, I would not have this completed project. I thank her for her emotional support, her efforts during data collection, and most of all her stabilizing influence over me. I would also like to thank my family. While not directly involved in this process, without them and their support I would not be in this position in the first place. Their continued presence in my life has allowed me to continue my education to the very end.

It goes without saying that many thanks need to go to my committee. Through moves and job changes, the committee has been rather dynamic over the past couple of years, but I would like to thank each and every one of them for their interest in being a part of this project and their diligence in providing feedback. This project is very much a product of their influence as well.

Finally, I would like to thank my friends. To the EMU poker crew, thank you for providing me something to do on Thursdays other than dissertation. Andrew, you are very much a contributor in this project via our late night discussions in the office. Even though your incessant questions about my dissertation progress did get annoying, this annoyance was welcome in that it kept reminding me to maintain focus. To all of my other friends, thank you for the distractions along the way. I very much needed them.

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Introduction

With the growing epidemic of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) over the past 30 years, research has focused on developing methods to reduce the number of people contracting the disease. Of those afflicted, 24% are between the ages of 13 to 24 years of age (Centers for Disease Control and Prevention, 2002) and due to the incubation period of the virus, it is safe to assume that many of these individuals are contracting HIV early in life. Considering that adolescence and young adulthood is characterized by increased sexual risk-taking and experimentation, as well as more frequent partner changes than later in life, focusing on the sexual behaviors of this population is of particular importance (Turner et al., 1998). The assessment of high-risk sexual behaviors has been a developing area since the landmark Kinsey studies (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, & Martin, 1953); however, to this date there has been little research addressing the changing technological landscape and its effect on assessment techniques. This study was developed to explore the impact that the changes in technology, specifically the increase in popularity of the Internet, would have on the assessment of high-risk sexual behavior.

High-risk sexual behaviors are defined as any sexual action that puts a person in direct contact with semen, blood, or vaginal secretions from someone who may have HIV/AIDS or a sexually transmitted diseases/infection (STD: Geodert, 1987). While few individuals knowingly engage in sexual behaviors with an infected person, high-risk sexual

behaviors are recognized as those actions or choices that increase the chance an individual will be infected. These include early sexual inception (i.e., under sixteen years of age); unprotected vaginal, anal, and/or oral sex; multiple and high-risk sexual partners; substance use prior to sexual interactions; and survival sex (e.g., sex for drugs or money) (Mezzich et al., 1997; Staton et al., 1999; Tapert, Aarons, Sedlar, & Brown, 2001; Taylor-Seehafer & Rew, 2000).

High-Risk Sexual Behaviors in Young Adults

Research on young adults has demonstrated that despite the growing threat of contracting HIV/AIDS, they continue to engage in high-risk sexual behaviors at alarming rates (Scandell, Klinkenberg, Hawkes, & Spriggs, 2003). According to the Centers for Disease Control (CDC: 2004b), as students exit high school, 61.6% have had sexual intercourse (62.3% of females; 60.7% of males) with 7.4% of students beginning before the age of thirteen. In addition, 20.3% (17.9% of females; 22.2% of males) of these students report having four or more sexual partners in their lifetimes and 48.9% (51.0% of females; 46.5% of males) report being sexually active at the time of the survey (Centers for Disease Control and Prevention, 2004b). The CDC (2004b) also reports that only 57.4% of graduating students report having used a condom at last sexual intercourse, indicating that almost 43% of students did not adequately protect themselves from contracting HIV/AIDS. In college students, inconsistent use of condoms (i.e., condom use all or some of the time) has been reported between 75 and 92 percent (Caron, Davis, Halteman, & Stickle, 1993; Desiderato & Crawford, 1995; Kusseling, Shapiro, Greenberg, & Wenger, 1996; MacDonald et al., 1990). While these percentages appear to be respectable, this is the "inconsistent use

of condoms." It is still the case that many of these individuals engage in sexual behaviors without condoms at least some of the time and are at risk of contraction the HIV virus.

Substance use. Another factor associated with high-risk sexual behavior in college students is substance use (Cooper, 2002; Prince & Bernard, 1998; Smith & Brown, 1998). Alcohol has been shown to have a strong relationship to high-risk sexual behaviors for both men and women (Poulson, Eppler, Satterwhite, Wuensch, & Bass, 1998) including younger age of first intercourse, inconsistent use of contraceptive methods, and more sexual partners (Desiderato & Crawford, 1995; Duncan, Strycker, & Duncan, 1999; Staton et al., 1999; Wechsler, Dowdall, Davenport, & Castillo, 1995). While the wealth of literature on substance use and high-risk sexual behaviors in college students focuses on alcohol, illicit drugs and high-risk sexual behaviors have also been linked. Research has demonstrated that marijuana use appears to be related to increased levels of high-risk sexual behaviors. Hingson, Strunin, et al. (1990) found that like alcohol users, recent marijuana users were almost two times less likely to use condoms than non-users. Marijuana users also initiated intercourse at earlier ages, had more sexual partners, and were more likely to have had intercourse with someone they had just met (Belcastro & Nicholson, 1982; Elliott & Morse, 1989; MacDonald et al., 1990; Mott & Haurin, 1988; Rosenbaum & Kandel, 1990). Similar findings are reported for other drugs, including amphetamines (Tapert et al., 2001), cocaine, and other stimulants (Lowry et al., 1994). One danger in this area is the development of addictions and dependencies upon these drugs. This can lead to survival sex (i.e., participating in sex in order to procure drugs or money). Exchanging sex acts for money and/or drugs is an extremely high-risk sexual behavior due to the large number of unknown partners and pressures to not use condoms.

Sexual abuse. Another factor that has an established relationship with high-risk sexual behavior is sexual abuse. A history of sexual abuse has been connected to early initiation of intercourse, failure to use contraception, prostitution, more unique sexual partners, higher pregnancy rates, and higher rates of HIV for both genders (Brown, Kessel, & Lourie, 1997; Lyon, Silber, & D'Angelo, 1997; Noll, Trickett, & Putnam, 2003; Roosa, Tein, Reinholtz, & Angelini, 1997; Widom & Kuhns, 1996). Chandy, Blum, and Resnick (1997) compared sexually abused males to non-sexually abused males and found that sexually abused males reported earlier ages of first consensual intercourse, more sexual partners, and were associated with more pregnancies. These results are noteworthy, considering that there is very little literature on the repercussions of sexual abuse for males, especially in the realm of high-risk sexual behaviors. Champion, Shain, Piper, and Perdue (2001) focused on the relationship of sexual abuse to high-risk sexual behaviors in minority women. They found that in Hispanic and African American women reporting a history of sexual abuse, there were more reports of STDs, an earlier age of first intercourse, higher numbers of sexual partners, and more instances of sex for money.

High-risk sexual behaviors are a problem in the young adult population whether they are due to conscious decisions made by the individual or due to the influence of substances or past sexual abuse. While these relationships have been demonstrated in the literature, it has not been without some difficulty due to the inability to directly assess these behaviors because of their private and sensitive nature, their susceptibility to many types of measurement error, and the reliance on self-reporting by the respondent.

Researching High-Risk Sexual Behavior

Research on high-risk sexual behaviors is limited due to the sensitive nature of the topic. Sensitive topics are those that are perceived to pose a threat to participants (Catania, Binson, van der Straten, & Stone, 1995; Lee, 1993). While asking questions about an individual's sexual behavior does not necessarily elicit a " threat," interpretation of the questions by the participants may lead them to believe otherwise (Catania et al., 1995). It is also the case that threats of sanction and scrutiny can mediate participation and responses (Lee, 1993). Fear of repercussions due to reporting sexual behaviors may lead individuals to respond falsely or refuse to participate in research (Bradburn, Sudman, Blair, & Stocking, 1978; Catania, McDermott, & Pollack, 1986; Johnson & DeLamater, 1976). This can especially be the case with sexual behaviors such as statutory rape, drug use before or during sex, paraphilias, and even homosexuality. The sensitivity of high-risk sexual behaviors directs the choice of assessment methods toward those that are less intrusive in an attempt to reduce the impact that examiner biases may play with interview methods. In order to be as minimally intrusive as possible, research on high-risk sexual behaviors has primarily relied upon retrospective self-reports (Anderson & Broffitt, 1988).

Retrospective Self-Reports of High-Risk Sexual Behaviors

Retrospective self-reporting has become the "industry standard" when assessing sexual behavior due to the sensitive nature of the target data. Retrospective self-reporting directly queries respondents about their past sexual behavior and relies on their ability to accurately recall and report the target information. However, the assessment of high-risk sexual behaviors with this method lends itself to a number of sources of measurement error due to factors associated with the respondent and the instrument.

Measurement error: Respondent. The error related to the participant involves personal attributes that affect the reporting of information (DiFranceisco, McAuliffe, & Sikkema, 1998). One of the more salient problems associated with self-report data is the reliance on participant's memory and recall of the sexual events (Catania, Gibson, Chitwood, & Coates, 1990; DiFranceisco et al., 1998; Schroder, Carey, & Vanable, 2003). When evaluating the effect of memory on the reporting of sexual behavior, many factors of the event(s) in question influence the accuracy of the reports. One of these factors is the length of interval between the event and recall. Schroder et al. (2003) report that the shorter the interval, the more accurate the recall data. Therefore, an individual is likely to have an easier time recalling all behaviors accurately over the past month than over the past year. Some investigators (Kauth, St. Lawrence, & Kelly, 1991; Patten, 1998) suggest limiting the target time period to one that is more recent in order to obtain more accurate responses (e.g., only those behaviors in the past two months). Catania and colleagues suggest also that events that have high personal salience may be more easily recalled. This salience may be contingent upon the emotionality of the event in question (Catania et al., 1990), as well as the relative frequency of the event (Schroder et al., 2003). Catania et al. note that sexual milestones tend to hold more emotion and are more salient than other behaviors, which result in more accurate reporting. However, when a behavior occurs frequently and is part of a much broader sexual repertoire, its salience becomes much lower (Catania et al., 1990; Catania et al., 1993; Schroder et al., 2003). To address issues of recall, it is helpful to employ techniques to help improve the recall ability of respondents. Weinhardt, Forsyth, et al. (Weinhardt, Forsyth, Carey, Jaworski, & Durant, 1998a) suggest (1) using important dates to anchor reporting periods, (2) encouraging respondents to use appointment books or

calendars, and (3) encouraging respondents to recall periods of abstinence or consistent sexual activity.

Another respondent factor that has plagued the assessment of high-risk sexual behavior is self-presentation bias (DiFranceisco et al., 1998; Latkin, Vlahov, & Anthony, 1993; Murphy & Davidshofer, 1991; Seal, 1997). Self-presentation bias, also referred to as social desirability, is the tendency for participants to respond to items in a favorable manner (Catania et al., 1993; Crowne & Marlowe, 1960). In order to present themselves in positive light, respondents may over- or underreport certain behaviors based upon how the sexual behaviors are viewed in their social contexts. The interesting aspect of self-presentation bias is that it can differ for each respondent depending upon privacy needs, embarrassment, fear of reprisal, and need for self-enhancement (Catania et al., 1993). Reporting of virginity is a good example of self-presentation bias. While one individual may view virginity as a positive attribute, others may feel that reporting intercourse when it has not occurred may make them more accepted in their peer group. In high-risk sexual behavior research, the assumption is that respondents tend to underreport high-risk sexual behaviors and overreport behaviors consistent with "safer" sex (Boekeloo et al., 1994; Siegel, Krauss, & Karus, 1994; Trice, 1987).

Respondent privacy and anonymity can be crucial in insuring that responses are more accurate and not a result of self-presentation bias (Gallant, 1985; Jones & Forrest, 1992; Locke & Gilbert, 1995; Turner, Danella, & Rogers, 1995; Turner, Lessler, & Devore, 1992). Durant, Carey, and Schroeder compared results from a group of students who were asked to provide identifying data that would be kept confidential and a group of students who were asked to not provide any identifying information and therefore remain anonymous. They

found that the frequencies of twelve risk behavior items for the confidential condition were significantly lower than those of the anonymous condition. These results are consistent with other research that demonstrates that when assessed under anonymous conditions, respondents are more candid (Stanton, 1998) and more apt to admit to high-risk sexual behaviors (Czaja, 1987-1988; Millstein & Irwin, 1983).

Measurement error: Instrument. Other factors that affect responding in sexual self-report measures are associated with the measure itself and can include question terminology, wording and syntax of the questions, and the examiner/interviewer (Jaccard & Wan, 1995). Terminology relates to the word or words used for behaviors. Different terms may not be recognizable by participants, which can lead to inaccurate responding (Catania et al., 1993). To avoid this, Catania and colleagues suggest running items through a pilot study to determine if they will be understood by the target population (Catania et al., 1990). Another option is to include a sheet that defines the words used and provide synonyms that the participants may recognize (Cupitt, 1998). The wording and structure of the question is also integral in ensuring accurate responses. DiFranceisco et al. (1998) found that question format accounted for a large amount of explained variance in questions on anal intercourse. One key is to guarantee that the question does not lead the respondent to believe that the behavior is undesirable, which may lead to underreporting (DiFranceisco et al., 1998) or refusal to answer (Catania et al., 1993). To address this, it is helpful to assume that respondents have participated in the behavior or load the question in such a way that suggests that the behavior is not uncommon (Catania et al., 1996; Catania et al., 1993; Raghubir & Menon, 1996; Sudman & Bradburn, 1983).

Also included in measurement error due to the instrument is the experimenter, who can bias the responses of participants through subtle cues called demand characteristics. Demand characteristics "pressure" the respondents to react or respond in a certain manner to please the experimenter (Hewson, Laurent, & Vogel, 1996; Reips, 2000). Thus, by circumventing any interaction between the respondent and examiner, demand characteristics associated with the experimenter should be minimized as much as possible. This instrument bias due to the experimenter supports the use of long-distance assessment methods in order to reduce or eradicate the direct interaction between respondent and experimenter, and therefore reduce effects of experimenter bias.

Despite the fact that there are a number of sources of measurement error associated with retrospective self-report measures, this method is considered by some researchers to be valid and reliable when compared to other validated gold standards of high-risk sexual behavior measurement. However, this is problematic for high-risk sexual behaviors due to the inability to directly assess these behaviors due to their private and sensitive nature.

Absence of a gold standard. The validity and reliability of retrospective self-report measures of sexual behaviors has been under scrutiny since its inception (Berk, Abramson, & Okami, 1995; Catania et al., 1990; Jaccard & Wan, 1995; McLaws, Oldenburg, Ross, & Cooper, 1990). Validity is the degree to which a measure accurately assesses what it purports to measure (Foster & Cone, 1995; Whitley, 1996). The inability to determine convergent and discriminant validity by not having a gold standard leads to an inability to demonstrate construct validity. A lack of construct validity makes it difficult to legitimize the inferences in a project to the theoretical constructs of the area of study (Trochim, 2006). Reliability is the capability of an assessment method to be consistent, stable, and dependable

in its ability to gather targeted data (Anastasi & Urbina, 1997; Whitley, 1996). The inability and unwillingness to observe sexual behaviors in a direct setting, as well as difficulty in obtaining valid and reliable physiological and psychophysiological data (Anderson & Broffitt, 1988; Weinhardt et al., 1998a), have made it impossible to develop a gold standard to determine which self-report measures and methodologies are valid and reliable (Weinhardt et al., 1998a).

Empirically-supported self-report measures of high-risk sexual behavior are few and far between in the literature. Out of the 200 surveys listed in the Handbook of Sexuality-Related Measures (Davis, Yarber, Bauserman, Schreer, & Davis, 1998), only three measure sexual risk and none are used in the reviewed literature. The lack of validated self-report measures on high-risk sexual behaviors is likely due to the majority of researchers who create their own measures in order to gather specific data (Carey, Carey, Weinhardt, & Gordon, 1997; Luster & Small, 1994; O'Hare, 1998; Ramirez-Valles, Zimmerman, & Newcomb, 1998; Staton et al., 1999; Tapert et al., 2001). Anderson and Broffitt (1988) suggest in their reliability study of the Sexual Experience Scale of the Derogatis Sexual Functioning Inventory (Derogatis & Melisaratos, 1979) that frequency reports of sexual behaviors may be more sensitive to changes than scales that check for presence or absence of a given behavior. Anderson and Broffitt demonstrated in their psychometric analysis of the Sexual Experience Scale of the Derogatis Sexual Functioning Inventory that simple self-reports of intercourse and kissing were reliable when assessed over a twelve-month period. This suggests that frequency estimates may be one of the more reliable and valid measures of self-reported sexual behavior available (Anderson & Broffitt, 1988).

Assumptions of high-risk sexual behavior research. The inability to compare self-report measures to a validated measure has led to the development of implicit assumptions to help evaluate the convergent validity and relative accuracy of the methods in question (Schroder et al., 2003). These assumptions suggest that (1) higher incidence and frequency reports of high-risk or socially undesirable behaviors suggest more accurate results; (2) privacy, anonymity, and credibility reduce bias effects and suggest more accurate results; (3) gender differences in self-reports are due to response bias and suggest results that are inaccurate; and (4) gender-specific norms affect perceived social desirability and cause response bias specific to gender (Biemer, 1988; Catania et al., 1990; Jaccard, McDonald, Wan, Dittus, & Quinlan, 2002; Schroder et al., 2003; Tourangeau & Smith, 1996; Turner, Ku, Sonenstein, & Pleck, 1996). These assumptions are used to compare different administration methods and measures to determine which formats may be less susceptible to measurement error and lead to more accurate responding.

Quality of data. When deciding on a self-administered data collection technique, it is important to not only account for issues of measurement error, but also for the quality of the data gathered (Herman, 1977). Frequently used indicators of high quality data are (1) accuracy and absence of self-preservation bias, (2) high unit and item response rates, (3) completeness of responses and information gathered (i.e., specific to open-ended responses), and (4) low error rates in data entry (de Leeuw & van der Zouwen, 1988; Schonlau, Fricker, & Elliott, 2002).

Response rates are one of the most frequently reported measurements of data quality due to the ease at which they can be assessed (Catania et al., 1995). Unit response rates are determined by dividing the number of measures returned by the total number administered.

Unit response rates for long-distance administration methods tend to be rather low (Schonlau et al., 2002). Research has determined that the most important determinant of good unit response rates for long-distance assessment methods is the number of attempts made to contact a sample (Dillman, Christenson, Carpenter, & Brooks, 1974; Goyder, 1985, 1987; Heberlein & Baumgartner, 1978). Unit response rates are directly related to the number of personal contacts made by the investigators encouraging completion of the measure. While it may be difficult to contact the entire sample in person, a combined e-mail and postal contact approach can be conducted to remind the respondents both before and after the measure has been distributed (Dillman, 2000). This allows the respondents to be ready for the arrival of the measure and provides them with a reminder to complete it after it has been received. Item response rates focus on the number of completed items on the received measures.

There are two formats to determine item response rates. The first approach is to sum the total items answered on each questionnaire and divide it by the number of items on the questionnaire. The second format assesses individual item response rate and divides the number of received measures with a particular item completed by the total number of received measures. Data quality can be affected by low item response rates since analyses involving these items do not include data omitted by the respondent either accidentally or purposefully.

Motivation to participate in a study also influences response rates on self-report measures (Catania et al., 1990; Couper & Stinson, 1999; Morokoff, 1986). Individuals who are motivated to participate may be more likely to provide answers and have lower refusal rates than individuals with a low motivation to participate (Catania et al., 1993). Low motivation may also lead to more "middle-of-the-road" or neutral answers.

To increase response rates of long-distance assessment methods, incentives are used frequently to increase the motivation to participate (Church, 1993; Gunn & Rhodes, 1981; Lockhart, 1984; Wolfe & Treiman, 1979) and are especially helpful when gathering sensitive information (Bailey, Foote, & Throckmorton, 2000). The addition of an incentive may cause an individual to ignore his/her original hesitancy to answer sensitive questions. While the use of incentives does appear to help increase response rates for long-distance assessment methods (Gajraj, Faria, & Dickinson, 1990), it also increases the overall cost of the study.

When attempting to acquire high-quality responses, it is best to assess those individuals who volunteer for the study (Walsh, Kiesler, Sproull, & Hesse, 1992), especially when conducting a survey of sexual behaviors (Catania et al., 1993). By volunteering, these individuals are typically aware of the purpose of the study and the nature of the questions that will be asked (Singer & Frankel, 1982). However, it is also the case that volunteers differ from non-volunteers. Sexual research volunteers tend to be male, more sexually liberal, and demonstrate higher levels of sexual activity (Wiederman, 1999; Wolchik, Braver, & Jensen, 1985). So while the data may be of higher quality, it may not necessarily be generalizable to the population.

Measurement error and data quality are important aspects of assessing high-risk sexual behaviors. As mentioned above, there are a number of methods that an experimenter can use to decrease measurement error and increase data quality. However, one of the most important aspects that affect these two variables is the administration method of the questionnaire.

Retrospective Self-Report Assessment Methods

A number of different methods for gathering retrospective self-reports of high-risk sexual behavior data exist, including using focus groups (Byers, Zeller, & Byers, 2002) and diary methods (Coxon, 1994; Leigh, Gillmore, & Morrison, 1998). However, the majority of research has focused on using interviews and survey methods for gathering these data.

Interview. Kinsey and colleagues (1948; 1953) pioneered the use of interviews in the assessment of sexual behavior more than five decades ago. Interviews typically consist of a semi-structured querying format and rely on the flexibility of the method to gather target data (Catania et al., 1993). Face-to-face interviews (FTFIs) are interviews in the physical presence of the participant. The direct contact provides important non-verbal information, the ability to observe distress and alter questioning accordingly, and cues to help a participant accurately respond to an item (Patten, 1998; Schroder et al., 2003).

A major disadvantage of FTFIs is their lack of anonymity and privacy. A participant is providing personal information directly to the interviewer, which may alter responses through self-preservation bias or outright refusal (Catania et al., 1993). Another disadvantage of interviews is that they are time-consuming and expensive. Interviews are not as efficient as other assessment methods due to the one-on-one nature of the data collection (Patten, 1998). Large amounts of time are necessary to schedule and meet the respondent, establish rapport, and complete the interview. Respondents are also affected by amount of time necessary for participation. Due to these time commitments, incentives for participation are often used to increase the number of participants and decrease attrition rates. These incentives, as well as the potential for high travel costs, increase total costs and cause FTFIs to be one of the most expensive data collection techniques.

Another interview format that is a popular alternative to the FTFI is the telephone interview (TI: de Leeuw & van der Zouwen, 1988). The TI utilizes the same flexibility as an FTFI, but with a less direct form of contact. The ability to interview a participant without being present is a major advantage of the TI. Unlike FTFIs, with TIs there is a social distance between the respondent and interviewer due to the lack of visual contact and the less interpersonal nature of the interaction (Weinhardt et al., 1998a). The increase in perceived privacy and anonymity due to this social distance has been shown to increase honest and accurate reporting of socially undesirable behaviors (Bradburn & Sudman, 1979; Colombotos, 1969; Hochstim, 1967; Locander, Sudman, & Bradburn, 1976; Rogers, 1976). However, this is contingent upon the credibility of the individual or organization gathering the data to ensure that they can be trusted with the personal and private responses (de Leeuw & van der Zouwen, 1988). Other advantages of the TI compared to the FTFI include faster response times (Schonlau et al., 2002), lower costs, greater quality control through supervisor monitoring, ability to interview at night and on weekends, and ability to query a greater number of individuals, as well as those in difficult to visit places (Groves & Kahn, 1979). Data also suggests that TIs result in equal to higher rates of responding (Bajos, Spira, Ducot, & Messiah, 1992; Catania et al., 1990; Catania et al., 1993; Czaja, 1987-1988) and good quality of data on sensitive topics (Catania et al., 1993; Rogers, 1976).

Unlike FTFIs, TIs do not utilize nonverbal behaviors (Bajos et al., 1992; Patten, 1998), which may lead to higher rates of item refusals or "hang-ups" if the respondent is becoming uncomfortable. Even though more than 97% of households have a telephone (Groves, 1989), TIs are not able to contact hard to reach groups such as the homeless, drug users, and very busy individuals (Catania et al., 1993). TIs can also be inhibited by the

strictly oral nature of the interaction. Complex questions can be difficult to understand over the telephone and may lead to an inaccurate response or refusal to answer due to misinterpretation of the question (Schonlau et al., 2002). Finally, TI response rates have also been affected by screening methods such as caller ID and answering machines (Schonlau et al., 2002). Individuals may not answer the phone when they do not recognize the number and/or may choose to ignore a message left on an answering machine.

The disadvantages associated with interviewing are particularly problematic for the assessment of sensitive information such as high-risk sexual behaviors. For this reason, interviewing was quickly eclipsed by less invasive methods for gathering target information.

Self-administered questionnaires. Perhaps the most popular and widely used method in assessing sexual behavior is the self-administered questionnaire (SAQ: Coxon, 1999). SAQs rely on the participant to complete the items on a given measure, typically in a paper-and-pencil format. The popularity of SAQs lies mostly in their efficient use of resources. SAQs are inexpensive due to the ability of one person to administer them to large groups simultaneously (Catania et al., 1993), which saves time and travel costs. SAQs also provide a considerable amount of anonymity for respondents (Catania et al., 1993). By administering a survey, an examiner can take steps to ensure that the data gathered is not connected to the participant. This increased anonymity is beneficial when assessing sensitive topics such as high-risk sexual behaviors. The increased privacy and anonymity increases the chance that respondents will report riskier behaviors accurately due to the reduced affect of self-preservation bias (Catania et al., 1990; Siegel et al., 1994).

Although SAQs are inexpensive and efficient, the skills of the participants limit the utility of SAQs. The majority of SAQs rely on written material to ask questions. Literacy

and familiarity with the language of the SAQ is therefore required to respond accurately to the items (Catania et al., 1993; Turner et al., 1998). When not controlled for, SAQs can become vulnerable to errors caused by a lack of understanding due to these factors (Schroder et al., 2003). While it is possible to have an examiner assist a respondent in understanding the questions, this takes away from the "self-administered" nature of the method and may affect the quality of the data by increasing self-preservation bias and demand characteristics (Couper & Stinson, 1999; de Leeuw, 1992). Since measurement error can still exist with the presence of an experimenter, long-distance methods of administration have been used to help decrease measurement error associated with demand characteristics.

Postal administration of questionnaires. One method of long-distance administration that has been utilized with SAQs is postal administration (Rogers, 1976; Rolnick, Gross, Garrard, & Gibson, 1989; Veiga, 1974). SAQs administered through the mail (postal-SAQs) offer all of the advantages of SAQs administered in person but allow researchers to collect samples that may generalize better to wider and broader populations. In addition, postal-SAQs avoid interaction between the respondent and the experimenter, which helps to maintain anonymity and reduce demand characteristics (Hewson et al., 1996). Due to this, postal-SAQs tend to gather more socially undesirable and accurate responses (McEwan, Harrington, Bhopal, Madhok, & McCallum, 1992; Rogers, 1976; Schonlau et al., 2002; Wiseman, 1972).

A major problem with postal-SAQs is their tendency to have low unit response rates (Schonlau et al., 2002). Due to the lack of social pressure, which is typically observed when an experimenter is present, postal-SAQs have been plagued with lower unit response rates than other traditional methods (Dillman et al., 1974). However, techniques have been

developed to increase the response rates of postal-SAQs. One technique is to enclose a pre-paid envelope for the return of the measure (Veiga, 1974). This allows the respondents to return the SAQ at no cost. Another suggestion is to send reminders (Eckland, 1965). Turner and colleagues (1988) found that response rates for postal-SAQs can be dramatically increased by sending one reminder letter and another copy of the questionnaire. However, this procedure can become expensive due to additional postage and copy costs. Pre-contacting respondents can also increase response rates (Allen, Schewe, & Wijk, 1980). By sending an announcement prior to the distribution of the postal-SAQs, respondents can be aware that the survey will be arriving soon and be reminded of how important it is that they complete it. Finally, incentives may be used to increase unit response rates of postal-SAQs (Gajraj et al., 1990). Gajraj and colleagues demonstrated a 28% difference in response rates between a no incentive and a monetary incentive group (i.e., 34% and 62% respectively). As mentioned above, incentives are used throughout data collection to increase the motivation to participate. However, for postal-SAQs, incentives work best when given prior to, or with the measure (Gajraj et al., 1990; Schonlau et al., 2002). Rather than completing the measure in hopes of getting reimbursed, enclosing the incentive with the survey appears to add credibility to the study and cause the respondents to feel responsible for completion of the survey. Gajraj and colleagues demonstrate a 20% difference in response rates when a monetary incentive is included with the survey, rather than promised (i.e., 62% and 40% respectively). Although postal-SAQs have been notorious for having low response rates, utilizing these suggestions can lead to unit response rates similar to or better (e.g. 74% response rate) than other methods (Dillman, 1978; McEwan et al., 1992).

Computer administration of questionnaires. The introduction of computers to experimenting in the late 1960s and early 1970s (Connes, 1972; Hoggatt, 1977) revolutionized standard labratory experimentation (Musch & Reips, 2000). As computers became more popular, their use in administration of psychological instruments also became more widespread (Bertram & Bayliss, 1984; Fouladi, McCarthy, & Moller, 2002). The introduction of computer-administered questionnaires (CAQ) provided a number of immediate benefits. First and foremost is a reduction in costs. Interviewers and interviewer costs are not needed to administer the measures and there is no cost in delivery or presentation of the measure. Also, the procedure is standardized (Gribble, Miller, Rogers, & Turner, 1999). Each and every participant in a CAQ receives the same presentation and data is immediately entered in a usable format. This avoids a large amount of time for transcription and coding, as well as the errors associated with manual entering of data. CAQs also add an additional amount of privacy and anonymity, which is helpful in assessments of sexual behavior (Millstein & Irwin, 1983). The absence of an interviewer helps to avoid experimenter biases and demand characteristics (Hewson et al., 1996). In addition, the ability to stop and think about one's answer to a sensitive question without keeping an interviewer waiting has been reported as a benefit to CAQs (Carr, Ghosh, & Ancill, 1983).

Comparison studies of CAQs to those administered by more traditional means have found this method to be an acceptable and valid means of collecting sensitive information (Millstein & Irwin, 1983). This is particularly interesting considering the number of differences between CAQs and traditional survey methods (Fouladi et al., 2002). Reporting of socially undesirable behaviors has been shown to be equivalent or greater in CAQs than in

traditional methods (Carr et al., 1983; Evan & Miller, 1969; Greist & Klein, 1980; Locke & Gilbert, 1995; Lucas, 1977; Lucas, Mullin, Luna, & McInroy, 1977; Martin & Nagao, 1989; Millstein & Irwin, 1983; Robinson & West, 1992; Romer et al., 1997; Skinner & Allen, 1983; Turner et al., 1998), suggesting that CAQs elicit more honest and accurate responding (Kobak, Greist, Jefferson, & Katzelnick, 1996; Petrie & Abell, 1994). Research on CAQs has also demonstrated that respondents find this method more legitimate (Gribble et al., 1999), less anxiety-provoking (Davis & Cowles, 1989), more interesting, and more enjoyable (Booth-Kewley, Edwards, & Rosenfeld, 1992; Greist & Klein, 1980; Honaker, Harrell, & Buffaloe, 1988; Locke & Gilbert, 1995; Millstein & Irwin, 1983; Robinson & West, 1992; Slack & Slack, 1977) than other methods.

Electronic mail administration of questionnaires. With the development of electronic mail (e-mail) and the Internet, a new avenue for computerized distribution of self-report measures was introduced. Originally developed by the United States Defense Department, the Internet was first used to connect the Advanced Research Projects Agency Network (ARPANet) to a radio and satellite network (Abbate, 1994; Hardy, 1995); however, its role is much larger now. As of November, 2006, more than 210 million people in the United States were using the Internet (Internet World Stats, 2006), and for many of these individuals it has become a staple of their daily lives. Initially, e-mail grew in popularity due to instantaneous delivery to the recipient at virtually no cost, as long as both individuals had access to the necessary hardware.

In the 1980s as Internet use became more widespread, survey researchers were intrigued by the potential use of e-mail as a faster and more cost efficient means for survey administration (Schonlau et al., 2002). Recipients would receive a copy of the questionnaire

in their inbox, type in their responses to the items, and then return it to the sender at their convenience (Sproull, 1986). E-mail-administered questionnaires (e-mail-SAQs) are very similar to postal-SAQs, but have been restricted to populations that have nearly universal e-mail access (Schaefer & Dillman, 1998). Early comparisons to interview and paper-and-pencil SAQ methods found that e-mail-SAQs could achieve good unit and item response rates, faster turnaround time, fewer errors due to inability to provide illegible responses, and more extreme answers to sensitive questions (Kiesler, Siegel, & McGuire, 1984; Kiesler & Sproull, 1986; Sproull, 1986). Since these early comparison studies, e-mail technology has been found to be a viable means of conducting surveys (Kuhnert & McCauley, 1996) and has even been described as "ideal" due to the lack of obtrusiveness associated with follow-up visits and telephone calls and the natural "paper" trail that is created by ingoing and outgoing mail logs (Fouladi et al., 2002). Recent research has continued to demonstrate the usefulness of this method (Schonlau et al., 2002; Tse et al., 1995).

Despite the notable advantages of e-mail-SAQs, there are some disadvantages, one of which is the lack of social pressure to respond (Sproull, 1986). The lack of a professional in close proximity to the individual may increase the probability that the participant will not complete the questionnaire and lead to lower response rates. In an examination of e-mail- and postal-SAQ comparison studies, Schonlau and colleagues (2002) found that postal-SAQs usually led to response rates as much as 21% higher. E-mail- and postal-SAQs both lack social proximity with the examiner, but items such as a prepaid postage envelopes and letterhead may help increase the credibility of postal-SAQs. To increase unit response rates of e-mail-SAQs, Mehta and Sivadas (1995) found that offering incentives and sending follow-up reminders to the participants helps to provide comparable response rates to postal

administration. Sending follow-up reminders is inexpensive and relatively easy via e-mail due to the speed at which they can be sent, as well as the option of sending reminders to every participant with only the click of a button. E-mail also offers the possibility of resending the survey with each reminder just in case the participant has lost the original or is unable to access it. This costs very little when compared to the possibility of resending questionnaires through the mail.

Another concern with e-mail-SAQs is the lack of anonymity. When returning the questionnaires to the examiners, the data provided are directly associated with the e-mail address from which they are sent. Therefore, participants are aware that their information will be connected to the e-mail address. While the only identifying information provided will often be the individual's e-mail address, many people view this as just as identifying as their name. Thus, it becomes imperative that researchers using e-mail administration methods ensure confidentiality of the information provided (Schaefer & Dillman, 1998).

Internet administration of questionnaires. While comparative research of e-mail-SAQs to other administration methods is available, it is somewhat limited due to the fact that it was quickly eclipsed by Internet-based survey administration or Internet-SAQs (Schonlau et al., 2002). Internet-based questionnaires utilize the World Wide Web (WWW) to disseminate interactive web pages in order to gather survey data. As the popularity of the Internet increased, so too did the interest in using this medium for administration of questionnaires (Kaye & Johnson, 1999; Schmidt, 1997; Stanton, 1998). As Krantz and Dalal (2000) indicate, the Internet has the flexibility to utilize any type of research design including experiments, correlational studies, psychological tests, and surveys. Krantz and colleagues (1997) are regarded as the first researchers to conduct an Internet-based experiment that was

published in a scientific journal. Their study focused on determinants of female attractiveness as gathered from an Internet-SAQ and a paper-and-pencil SAQ. They found that the Internet-SAQ respondents appeared to be affected by the same psychological variables as those responding via the paper-and-pencil-SAQ.

Since Krantz et al.'s (1997) Internet experiment, many more researchers have used this method. Results have demonstrated that Internet-SAQs have many of the same advantages of e-mail-SAQs. Similar to e-mail administration, Internet-SAQs are cheaper, use less experimenter time (Bailey et al., 2000; Barak, 1999; Mustanski, 2001; Pasveer & Ellard, 1998; Schmidt, 1997), and are available around-the-clock for maximum convenience to the participant (Barak, 1999; Schmidt, 1997; Smith & Leigh, 1997). The around-the-clock availability reduces pressure to quickly answer a question that may require some contemplation and allows a greater access to feelings associated with the questions (Davis, 1999). In addition, the data acquired from Internet-SAQs can be written directly to file, which avoids data entry errors and allows for immediate analysis upon receipt (Barak, 1999; Pasveer & Ellard, 1998; Schmidt, 1997; Schonlau et al., 2002; Truell, Bartlett, & Alexander, 2002). Internet-SAQs also allow the researcher to ensure that data collected is in the desired format. Unlike e-mail-SAQs, which permit an open-ended response pattern to questions, Internet-SAQs can limit the data gathered and enforce formats such as multiple choice, true or false, or forced choice responding (Stanton, 1998). Internet-SAQs are also completely voluntary, which improves participant motivation (Reips, 2000; Riva, Teruzzi, & Anolli, 2003), and available to a large sample size, which helps improve generalizability (Mustanski, 2001; Pasveer & Ellard, 1998).

One of the major benefits of the Internet is the anonymous nature of interactions. This anonymity often leads to greater risk-taking in disclosing information to individuals via this method rather than traditional means (McKenna & Bargh, 2000). The same holds true for Internet-SAQs. The anonymity associated with Internet-SAQs helps to reduce effects of social desirability (Joinson, 1999) and leads to greater honesty and self-disclosure (Davis, 1999; Hewson et al., 1996; Pasveer & Ellard, 1998; Smith & Leigh, 1997). This suggests that the Internet may be a more accurate sampling method than other techniques (Joinson, 1999). In addition, there is often little to no interaction between the experimenter and the participant, which helps to reduce the effects of experimenter bias and demand characteristics (Buchanan & Smith, 1999; Reips, 2000). Due to the aforementioned benefits and improved assurance of anonymity, it is not surprising that most respondents who complete Internet-SAQs indicate that they would complete them in the future (Reips, 2000).

While there are a number of benefits to Internet-SAQs, problems exist with this method. First and foremost is the lack of experimental control, specifically control of the environment (Buchanan & Smith, 1999; Riva et al., 2003). It is nearly impossible to control the environment in which the Internet-SAQ is completed. Responses could differ depending on whether the participant is alone, in a crowded computer lab, sexually aroused, or intoxicated (Mustanski, 2001). Also, subjects are often self-selected, which can affect the quality of the data (Riva et al., 2003). Internet-SAQs are also not easily accessed by individuals who do not have computers, Internet access, or are intimidated by or ignorant about computers (Musch & Reips, 2000). These restrictions often rule out those who are of low socioeconomic status, uneducated, and older, which challenges the generalizability of data gathered via the Internet to the general population. Another disadvantage of Internet-

SAQs is the possibility of multiple submissions. If incentives are offered for completion of the survey, the possibility of multiple submissions becomes problematic (Pasveer & Ellard, 1998). Participants may complete the measure more than once in order to receive more money or for a greater chance of winning in random drawing. This can be controlled by checking for duplicated Internet protocol (IP) addresses or by establishing a password system to limit survey completions to one per password (Reips, 2000).

Comparison studies of Internet-SAQs to other SAQ formats have found the Internet to be a viable and suitable alternative to more common administration methods (Bailey et al., 2000; Bicanich, Slivinski, Hardwicke, & Kapes, 1997; Booth-Kewley et al., 1992; Fouladi et al., 2002; Riva et al., 2003). It is necessary to demonstrate equivalence of Internet-SAQs to traditional methods prior to adopting the Internet-based methods (Krantz et al., 1997; Smith & Leigh, 1997), specifically in regards to quality of data gathered and the psychometric properties of the measures used. Research has demonstrated that the quality of the data (Krantz et al., 1997; Pettit, 2002; Stanton, 1998) and psychometric properties (Krantz & Dalal, 2000; Riva et al., 2003; Stanton, 1998) of Internet-SAQs are equal to or better than that of more traditional means.

Demonstrating Equivalence of Data Collection Methods

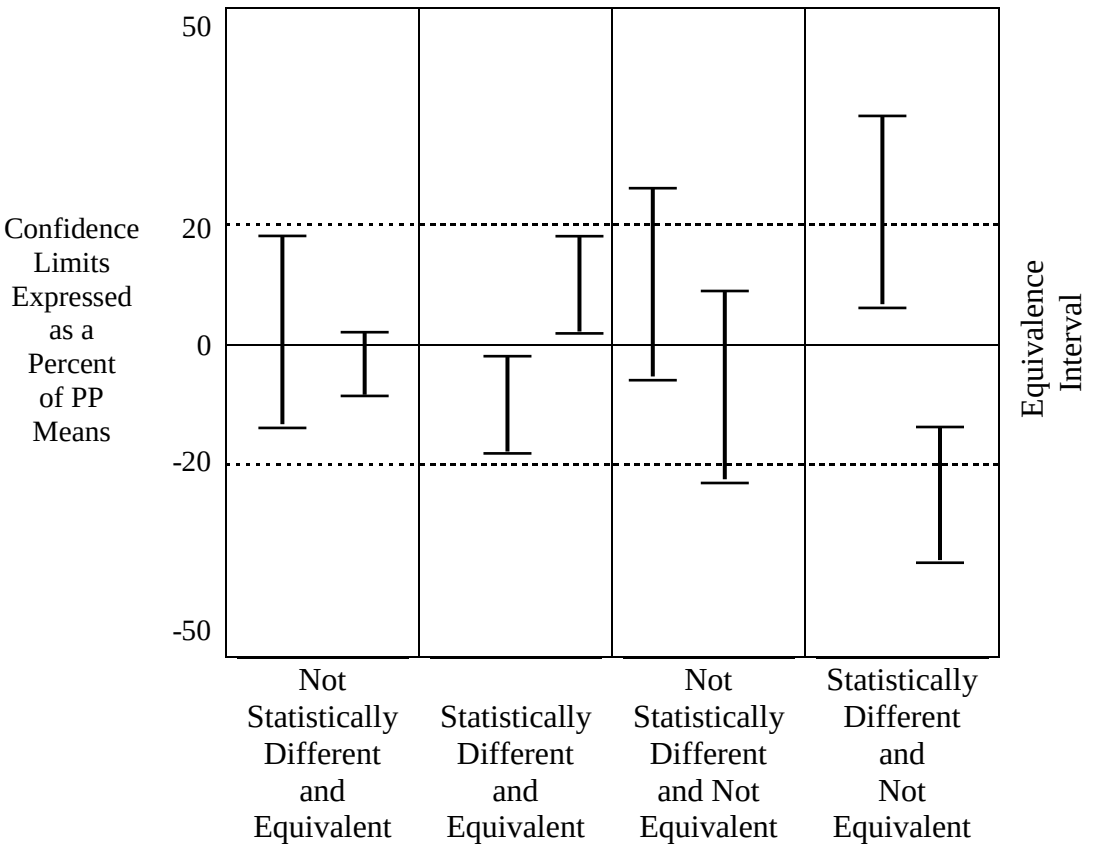
In group experimental studies, it may be desirable to obtain results of "statistical significance" to demonstrate that true differences likely exist due to the experimentation. However, in comparison studies of survey methods, the absence of a difference can be desirable and may allow one to choose the method that uses the fewest resources as long as the "no difference" results are replicated in the future (Biemer, 1988; Booth-Kewley et al., 1992). In addition, fewer resources introduce fewer sources of variance into the

methodology. Newer analyses have focused on equivalency by looking at the quality of data, direction of difference, and effect size (Biemer, 1988). Equivalency analyses have been developed to determine whether groups are statistically similar enough to be considered equivalent (Rogers, Howard, & Vessey, 1993; Westlake, 1976, 1979).

In equivalency analyses, the null hypothesis asserts that the difference between compared groups differs by a predetermined value specified by the investigator, and the alternative hypothesis asserts that the difference between the groups is smaller than the predetermined value (Rogers et al., 1993). This differs from traditional null hypothesis significance testing (NHST), which asserts that the null hypothesis represents no difference between groups and that the alternative hypothesis represents a statistically significant difference between groups. For equivalence testing, an equivalence interval is set to denote the minimum and maximum difference allowed in the analysis. Previous research has used $\pm$20% of the mean as an allowable difference (Epstein, Klinkenberg, Wiley, & McKinley, 2001; Shadle, 2003). Two one-tailed t-tests are then used to characterize the null hypothesis. The first t-test is used to determine if the means are higher than one another by a magnitude more than the +20% equivalency criterion. The second t-test is used to determine if the means are lower than one another by a magnitude more than the –20% equivalency criterion. This is identical to establishing a confidence interval and comparing it to the equivalency interval. To conclude equivalency, the confidence interval must lie within the established equivalency interval (Shadle, 2003). A visual representation is provided in Figure 1, which demonstrates that it is possible for groups to be statistically different, but also equivalent; just as a lack of statistical difference does not preclude equivalency.

Figure 1

Possible Results of Equivalence and Confidence Intervals



Note. Dotted lines represent an equivalence interval set at 20% of the PP mean. Bars represent 95% confidence intervals around the paper-and-pencil means minus Web-based means. Figure adapted from Rogers, Howard, & Vessey, 1993.

Purpose of the Current Study

While there is a large amount of literature comparing different assessment methods in search of one that elicits the best quality of data and response rates of self-report data (Bicanich et al., 1997; Booth-Kewley et al., 1992; Coxon, 1999; Davis, 1999; de Leeuw,

1992; de Leeuw & van der Zouwen, 1988; DiFranceisco et al., 1998; Fouladi et al., 2002; Gribble et al., 1999; Hewson et al., 1996; Kiesler & Sproull, 1986; Krantz et al., 1997; McEwan et al., 1992; Mehta & Sivadas, 1995; Morrison, Leigh, & Gillmore, 1999; Pettit, 2002; Riva et al., 2003; Robinson & West, 1992; Rogers, 1976; Rozensky, Honor, Rasinski, Tovian, & Hertz, 1986; Schmidt, 1997; Schonlau et al., 2002; Skinner & Allen, 1983; Sproull, 1986; Stanton, 1998; Tourangeau & Smith, 1996; Truell et al., 2002; Tse et al., 1995), none compare the primary long-distance assessment methods that have become popular in survey research. In addition, very few of these comparative studies focus on the assessment of high-risk sexual behavior--a topic that would appear to benefit greatly from long-distance assessment methods. The purpose of this study was to compare long-distance assessment methods (e.g., postal, telephone, e-mail, Internet) of a high-risk sexual behavior questionnaire and determine if these administration methods differ or are equivalent, and to assess if certain methods result in higher rates of high-risk sexual behavior reporting, higher item and unit response rates, higher levels of intrusiveness, higher reports of enjoyment, and lower use of resources (i.e., time, money, supplies).

Hypotheses

Hypothesis 1: Accuracy of data. Following the implied assumptions of sexual behavior research listed in Schroder et al. (2003), accuracy was determined from the comparative analysis of the mean responses to high-risk sexual behaviors on each assessment method. It was expected that there would be no statistically significant differences in accuracy between the different methods of assessment. However, if differences existed, it was expected that the technological methods (i.e., E-mail- and Internet-SAQs) would demonstrate the highest reported levels of high-risk sexual behaviors and therefore the most

accurate reports (Davis, 1999; Hewson et al., 1996; Pasveer & Ellard, 1998; Smith & Leigh, 1997). Univariate analysis of variance (ANOVA) were conducted to determine whether differences existed between the methods on the items that assess age of initiation, number of partners, and use of a condom of the different sexual behaviors. Confidence interval equivalency analyses were then used to determine if the methods of assessment were equivalent in terms of accuracy of data.

Hypothesis 2: Item response rate. Item response rate refers to the overall completion rate of items on a given measure. This was determined by dividing the total number of items answered by the total number of items on the measure. These item response rate means were calculated for each assessment method. It was expected that there would be no statistically significant differences in item response rate between the different methods of assessment. However, if differences existed, it was expected that the TAQ method would demonstrate the highest item response rate due to the more direct form of the experimenter/respondent interaction (Bajos et al., 1992; Catania et al., 1990; Catania et al., 1993; Czaja, 1987-1988). A univariate ANOVA was conducted to determine whether differences existed between the methods on their mean item response rates. Confidence interval equivalency analyses were then conducted to determine if the methods of assessment were equivalent in terms of item response rate.

Hypothesis 3: Unit response rate. Unit response rate refers to the total number of completed and returned measures. This number was divided by the total measures administered/number of participants for each assessment method. It was expected that there would be no statistically significant differences in unit response rate between the different methods of assessment. However, if differences existed, it was expected that the Internet-

SAQ would demonstrate the highest unit response rate. A univariate ANOVA was conducted to determine whether differences existed between the administration methods on total response rate. Confidence interval equivalency analyses were then conducted to determine if the methods of assessment were equivalent in terms of unit response rate.

Hypothesis 4: Intrusiveness of method. To gauge the intrusiveness of the method, respondents were queried on how intrusive, in regards to their privacy, was the method of survey administration. They were asked to indicate the level of intrusiveness from one of five responses that ranged from "very non-intrusive" to "very intrusive." It was expected that there would be no statistically significant differences between the different methods of assessment on perceived intrusiveness of the assessment method. However, if differences existed, it was expected that the TAQ would demonstrate the highest reported feelings of intrusiveness. A univariate ANOVA were conducted to determine whether differences existed between the methods when comparing the means to the item asking for a subjective rating of intrusiveness. Confidence interval equivalency analyses were then conducted to determine if the methods of assessment were equivalent in terms of intrusiveness ratings.

Hypothesis 5: Enjoyment of method. In terms of the level of enjoyment, respondents were asked to rate how much they liked completing the survey in their assigned format and were provided with five choices ranging from "liked very much" to "disliked very much." Respondents were then asked to indicate with which method they would like to take the survey if it were to be readministered. It was expected that the Internet-SAQ would demonstrate higher levels of reported enjoyment and respondent loyalty (Booth-Kewley et al., 1992; Greist & Klein, 1980; Honaker et al., 1988; Locke & Gilbert, 1995; Millstein & Irwin, 1983; Robinson & West, 1992; Slack & Slack, 1977). A univariate ANOVA was

conducted to determine whether differences existed between the methods when comparing the means of the item asking for a subjective rating of enjoyment. Confidence interval equivalency analyses were then conducted to determine if the methods of assessment were equivalent in terms of enjoyment ratings.

Hypothesis 6: Use of resources. Throughout the study, logs were kept tracking experimenter time, cost, and use of other resources associated with each assessment method. It was expected that the Internet-SAQ would demonstrate the lowest levels of experimenter time as well as cost and use of resources (Bailey et al., 2000; Barak, 1999; Mustanski, 2001; Pasveer & Ellard, 1998; Schmidt, 1997). A univariate ANOVA was conducted to compare the assessment methods on respondent completion time. Examiner time and total cost were unable to be analyzed statistically due to the manner in which the data were collected. Inferences were made based upon group mean comparisons.

Method

Participants

Students in introductory psychology courses offered at a mid-sized, urban, Midwestern university were given the opportunity to participate in this study in order to receive extra credit from their instructors. Of the roughly 1000 students introduced to the study, a total of 938 completed the paperwork necessary to be included in the study. The participants were treated according to the American Psychological Association's guidelines for the ethical treatment of human research participants (American Psychological Association, 2002).

Measures

In order to gather the necessary data for this study, three different measures were used. A screening questionnaire was administered to determine whether individuals met the criteria necessary to be eligible for inclusion in the study. The Sexual History Survey was developed and used to obtain data for the independent variables, and a non-respondent follow-up questionnaire was administered to query those who failed to complete or return the measure after screening.

Screening questionnaire. Potential participants were administered this 12-item measure (Appendix A) in order to determine eligibility for participation and to assist in random assignment. Potential participants were asked to provide demographic information such as gender, age, year in school, and place of residence. Also, items on this measure assessed the potential participants' eligibility for the study. Individuals were asked to indicate whether they were born and raised in United States/Canada and whether they had difficulty hearing on the telephone. Finally, potential participants were asked to provide their

school or primary mailing address, telephone number, and their university or primary e-mail address in order to facilitate further participation in the study. All three forms of contact information were necessary for inclusion in order to allow for random assignment.

Sexual History Survey. Research by Anderson and Broffitt (1988) suggests that frequency estimates may be one of the more reliable and valid measures of self-reported sexual behavior available. An examination of the literature did not result in a questionnaire that addresses high-risk sexual behaviors through frequency estimates of age of initiation, number of partners, and contraceptive behavior. Therefore, the Sexual History Survey (SHS; Appendix B) was developed using questions from a variety of validated instruments. The compiled items assess demographic data, age of inception and number of sexual partners, incidence of specific high-risk sexual behaviors, and subjective feelings about the questionnaire and administration method.

Demographic questions were included to obtain descriptive information about the participants and each experimental group as a whole. They assessed gender, age, year in school, participation or expectation of participation in a fraternity or sorority, residential status, ethnicity, religiosity, sexual orientation, and relationship status.

Items assessing sexual history and incidence of high-risk sexual behaviors focus on the age of inception, number of different partners, and use of contraception of four sexual behaviors (i.e., performing and receiving oral sex, vaginal intercourse, and anal intercourse). Items also focus on the frequency of sex while under the influence of alcohol and drugs, previous diagnosis of HIV/AIDS or an STD/I, previous pregnancy, and past sexual abuse. These items were extracted from previously developed high-risk behavior questionnaires that included items on sexual behavior. Items from the Youth Risk Behavior Survey (YRBS:

Centers for Disease Control and Prevention, 2005) were extracted due to its association with the CDC and its yearly use in both state and national administrations. Test-retest reliability data conducted in 2000 (Brener et al., 2002) demonstrated that 78% of the items did not differ significantly between the two administrations. Of the remaining 22% of the items, 10 demonstrated questionable reliability due to kappas less than 61% and significantly different prevalence estimates and were either changed or omitted from future versions (Centers for Disease Control and Prevention, 2004a). Items were also extracted from the National College Health Assessment (NCHA: American College Health Association, 2003). The NCHA is an assessment of college student health behaviors developed by an interdisciplinary team of college health professionals (American College Health Association, 2001). The NCHA was compared to five different national databases for item reliability, construct and measurement validity, and a comparison of relevant percentages. The final results of these analyses demonstrates that the NCHA is both a reliable and valid measure for assessing college students (American College Health Association, 2001). Additional items were extracted from the National Health and Social Life Survey (NHSLS: Laumann, Gagnon, Michael, & Michaels, 1994). The NHSLS was developed to explore the social organization of society in the United States. Laumann and colleagues compared their data to those of other data sets in order to determine generalizability of their sample and the validity of their measure. Comparisons of reported sexual behavior to these data sets demonstrated that there is an almost identical pattern of responses (Laumann et al., 1994), suggesting that the sexual behavior questions in the NHSLS demonstrate good construct validity. No other validity or reliability analyses were conducted on the NHSLS. The final survey from which items were extracted is the Sexual History Questionnaire (SHQ: Cupitt, 1998). The SHQ was created to

measure the extent to which one's sexual behavior is putting him or her at risk of contracting HIV (Cupitt, 1998). Test-retest reliability measurements of the SHQ demonstrate an intra-class correlation above 0.80 ($p < .001$) demonstrating a high degree of reliability (Cupitt, 1998). Cupitt also notes that the items carry a high degree of face validity due to the inclusion of a definition sheet for respondents.

The final items of the SHS assessed the subjective experiences of the participants when completing the questionnaire. Participants were asked how they felt about the survey, specifically their feelings of privacy, enjoyment of administration method, total time spent, and whether they would prefer a different assessment method.

Different sets of directions were developed to assist participants in answering the mode of administration to which they were assigned (Appendices C-F). These directions were included with the SHS and will instruct the respondents as to how to complete the SHS in that particular mode of administration.

Finally, a definition sheet was included to assist the participants in completing the SHS (Appendix G). The definition sheet provided slang words and explanations of a number of the terms located in the SHS.

In order to identify and/or troubleshoot problems prior to the study, the SHS was administered in pilot format. Pilot administration consisted of distribution of the SHS and the Pilot Questionnaire (Appendix H) to volunteers in an upper level psychology class. Thirty students completed the pilot administration and provided comments and suggestions, which were addressed in the final version of the SHS. Of these comments, some of the ones addressed the final version of the SHS involved wording of items, additional responses for other possibilities in demographic questionnaires, and better explanation of some items.

Non-respondent follow-up questionnaire. The non-respondent follow-up questionnaire (Appendix I) was sent via e-mail and the United States Postal Service (i.e., USPS or "snail mail") to those individuals that initially agreed to participate, but did not complete the SHS. This questionnaire asked non-respondents to indicate which factors led to their non-response to the SHS, including did not receive the SHS, unable to access/complete the SHS, completed SHS but not received by investigator, and invaded privacy.

Procedure

The study was introduced to the students in participating introductory psychology classes via the Project Introduction Script (Appendix J). Students were asked to read and sign the Informed Consent Form (Appendix K) and complete the Screening Questionnaire to determine their eligibility for the study. Of the 938 students who agreed to participate, 158 were removed from the study for the following reasons: not eighteen years old or older (77 individuals), not born/raised in the United States or Canada (37 individuals), cannot hear well on the telephone (35 individuals), failure to provide a mailing address (1 individual), failure to provide a telephone number (17 individuals), and failure to provide an e-mail address (9 individuals)[1]. In order to maintain the appearance of participation, these individuals were provided with alternate forms of participation. Participants under the age of eighteen were sent a web link via e-mail leading to standard demographic questions. The remaining individuals were sent a web link via e-mail to an additional online version of the SHS; however, this survey was not affiliated with the experimental group and their data were not included in the results.

[1] Due to the possibility of meeting more than one of the exclusionary criteria, summation of these figures equals more than 158 individuals.

After removal of screened individuals who met the exclusionary criteria, the remaining 780 participants were randomly assigned to one of the four experimental groups: postal self-administered questionnaire (Postal-SAQ), telephone administered questionnaire (TAQ), electronic mail self-administered questionnaire (E-mail-SAQ), and Internet self-administered questionnaire (Internet-SAQ).

In the postal-SAQ method, participants were sent a paper-and-pencil form of the questionnaire via the United States Postal Service (USPS). A pencil and an addressed and stamped return envelope were included in the packet.

For the TAQ mode, participants were contacted by telephone by the principal investigator. Participants were called during the times they indicated on the Screening Questionnaire.

In the e-mail-SAQ condition, electronic mail versions of the SHS were sent to the primary and/or secondary email accounts listed by the participants on the Screening Questionnaire. The e-mail version was a typed-text form of the questionnaire. Participants were asked to type in their responses to the items after each question and then utilize the "reply to sender" or equivalent function on their e-mail program/browser to send the completed survey back to the principal investigator.

The Internet version of the SHS was created using the Internet site SurveyMonkey (www.surveymonkey.com). This site specializes in the creation of Internet surveys and offers many different options and formats for survey setup. SurveyMonkey was chosen due to the quality of the assurances regarding the privacy of data. In their privacy statement, SurveyMonkey.com states "We will not use the information collected from your surveys in any way, shape, or form" (SurveyMonkey.com, 2000). In addition, SurveyMonkey.com has

Safe Harbor certification from the United States Department of Commerce, which ensures that sites ". . . must take reasonable precaution to protect personal information from loss, misuse, and unauthorized access, disclosure, alteration, and destruction" (United States Department of Commerce, 2002). Certification indicates that SurveyMonkey has met or exceeded United States Department of Commerce regulations in the protection of personal information on their website. This certification asserts that SurveyMonkey is a reputable survey site and has established defenses against computer hackers. In addition, the principal investigator, for an additional monthly cost, chose increased encryption security. Participants were sent a personalized web link via e-mail directing them to the SHS on the SurveyMonkey site. The personalized web link assured that the survey was not publicly available and that responses came only from those who received the web link. It was also the case that only one response would be provided per web link, further guaranteeing that responses would come from only those participants assigned to the Internet-SAQ group. While an option, forced choice responding was not activated for this Internet survey in order to provide participants in this format the same liberties as participants in the other three experimental groups.

After participants were randomly assigned to an experimental group, the Project Initiation Announcements (Appendices L-O) were sent out via the USPS and electronic mail informing them of the manner in which they would participate. Approximately one week later the paper-and-pencil version of the SHS was sent out via "snail mail," telephone interviews began, and e-mails were sent containing the e-mail version of the SHS for those in the E-mail-SAQ group or a web link to the Internet version of the SHS for those in the Internet-SAQ group. About two weeks later, the Reminder Notifications (Appendices P-S)

were sent out via “snail” and electronic mail to those participants from whom no data had yet been received. About three weeks following the distribution of the Reminder Notifications, the Thank You Letters (Appendix T) were sent out via “snail” and electronic mail to those participants who had completed the SHS, and the Sexual History Survey Non-Respondent Follow-up was distributed to those who had not completed the SHS.

Results

Prior to analysis, all data were checked to insure accuracy of entry and to verify missing values. Descriptive statistics were analyzed for abnormal range of responses or unexplainable outliers. Those that were identified were compared to the actual response from the participant and corrected or erased (i.e., range of responding is 0-3 and participant responded with a number outside of this range). Of the 780 participants randomly assigned to the four experimental groups, 635 (81%) completed the SHS in their assigned format. Of the 145 participants who did not complete the SHS, 24 completed the Non-Respondent Follow-up Questionnaire. Eleven of the 24 non-responders that completed the follow-up questionnaire indicated that they did not receive the SHS, while four indicated that they had completed the SHS and sent it back, and another four indicated that they had completed the SHS but failed to send it back. Other reasons for not completing the SHS included the following: could not open the electronic mail message, was not contacted by telephone, felt that the SHS invaded privacy, and no longer wished to participate in the study.

Sample Characteristics

Demographics. Number of responses and percentage of group responses are listed for all nine demographic items in Table 1. The sample used for analysis was composed of approximately 67% women (n = 424), and 33% men (n = 211). Ages of the respondents ranged from 17[2] to 50 years of age (M = 18.99, SD = 2.39). In response to the number of semesters of college, about 45% of the respondents

[2] One respondent identified herself as 17-years-old on the SHS. Since this was an exclusionary criterion, analysis of the data indicated that the respondent identified herself as 18-years-old on the Screening Questionnaire and was allowed to continue participation.

Table 1

Demographic Data of Experimental Groups

	Postal-SAQ	TAQ	E-Mail-SAQ	Internet-SAQ	Total
Item 1 - Gender					
Male	56 (37%)	63 (37%)	38 (26%)	54 (33%)	211 (33%)
Female	97 (63%)	106 (63%)	109 (74%)	112 (67%)	424 (67%)
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Item 2 - Age	19.14 (3.43)	18.95 (2.14)	18.99 (2.00)	18.88 (1.72)	18.99 (2.40)
Item 3 - Semesters of College					
0	68 (45%)	92 (55%)	53 (36%)	69 (42%)	282 (45%)
1-2	48 (31%)	38 (22%)	52 (35%)	54 (33%)	192 (30%)
3-4	18 (12%)	18 (11%)	17 (12%)	24 (14%)	77 (12%)
5-6	7 (5%)	8 (5%)	14 (10%)	12 (7%)	41 (>6%)
7 or more	11 (7%)	12 (7%)	11 (7%)	7 (4%)	41 (>6%)

	Postal-SAQ	TAQ	E-Mail-SAQ	Internet-SAQ	Total
Item 4 - Fraternity/Sorority					
Yes, I am a member	7 (5%)	15 (9%)	5 (3%)	11(7%)	38 (6%)
No, but plan on joining	19 (12%)	25 (15%)	12 (8%)	19 (10%)	72 (11%)
No, never a member	127 (83%)	126 (74%)	126 (<86%)	138 (83%)	517 (82%)
No, but was a member	0 (0%)	3 (2%)	4 (<3%)	1 (1%)	8 (1%)
Item 5 - Living Situation					
Residence Hall	77 (51%)	100 (59%)	82 (56%)	88 (53%)	347 (55%)
University Apt.	5 (3%)	1 (1%)	6 (4%)	3 (2%)	15 (2%)
Apt./House $\leq$ 5 miles	15 (10%)	17 (10%)	19 (13%)	22 (13%)	73 (12%)
Apt./House > 5 miles	6 (4%)	7 (4%)	7 (5%)	9 (5%)	29 (4%)
With Parents/Guardians	49 (32%)	44 (26%)	33 (22%)	44 (27%)	170 (27%)

	Postal-SAQ	TAQ	E-Mail-SAQ	Internet-SAQ	Total
Item 6 - Ethnic/Cultural Identity					
Caucasian/White	117 (76%)	133 (78%)	119 (82%)	132 (80%)	501 (79%)
African American/Black	27 (18%)	29 (17%)	18 (12%)	19 (11%)	93 (15%)
Native American	1 (1%)	1 (1%)	0 (0%)	4 (2%)	6 (1%)
Asian/Pacific Islander	2 (1%)	0 (0%)	2 (1%)	4 (2%)	8 (1%)
Latino/Hispanic	1 (1%)	3 (2%)	4 (3%)	1 (1%)	9 (1%)
Other	5 (3%)	3 (2%)	3 (2%)	6 (4%)	17 (3%)

	Postal-SAQ	TAQ	E-Mail-SAQ	Internet-SAQ	Total
Item 7 - Religious Services					
Several times a week	5 (3%)	5 (3%)	2 (1%)	6 (4%)	18 (3%)
Every week	15 (10%)	8 (5%)	10 (7%)	11 (7%)	44 (7%)
Nearly every week	11 (7%)	15 (9%)	14 (10%)	16 (10%)	56 (9%)
2-3 times a month	12 (8%)	28 (16%)	11 (8%)	6 (4%)	57 (9%)
About once a month	13 (8%)	17 (10%)	19 (13%)	24 (14%)	73 (12%)
Several times a year	24 (16%)	35 (21%)	19 (13%)	25 (15%)	103 (16%)
Once or twice a year	27 (18%)	34 (20%)	32 (22%)	33 (20%)	126 (20%)
Less than once a year	12 (8%)	11 (7%)	16 (11%)	14 (8%)	53 (8%)
Never	34 (22%)	16 (9%)	22 (15%)	30 (18%)	102 (16%)

	Postal-SAQ	TAQ	E-Mail-SAQ	Internet-SAQ	Total
Item 8 - Sexual Orientation					
Heterosexual	149 (98%)	167 (99%)	137 (93%)	157 (95%)	610 (96%)
Homosexual	2 (1%)	1 (<1%)	1 (1%)	4 (>2%)	8 (>1%)
Bisexual	1 (1%)	1 (<1%)	8 (5%)	4 (>2%)	14 (>2%)
Other	0 (0%)	0 (0%)	1 (1%)	0 (0%)	1 (>0%)
Item 9 - Relationship Status					
Single; not dating	67 (44%)	73 (43%)	49 (34%)	63 (38%)	252 (40%)
Dating; only 1 person	67 (44%)	82 (49%)	78 (54%)	75 (45%)	302 (48%)
Dating; 2 or more people	8 (5%)	7 (4%)	12 (8%)	16 (10%)	43 (7%)
Engaged	7 (4%)	5 (3%)	2 (1%)	6 (4%)	20 (3%)
Married	3 (2%)	2 (1%)	5 (3%)	5 (3%)	15 (2%)
Divorced	1 (1%)	0 (0%)	0 (0%)	0 (0%)	1 (>0%)
Widowed	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

indicated that the current semester was their first semester (*n* = 282), while 30% of the respondents specified that they had completed one to two semesters of college (*n* = 192). The remaining 25% of respondents signified that they had completed 3 or more semesters of college. In regard to fraternity/sorority status, the vast majority of respondents (81%) indicated that they were not in a fraternity/sorority and had no intention of joining in the future (*n* = 517). Of the other respondents, 11% indicated that they were not in a fraternity/sorority but planned on joining in the future (*n* = 72), 6% indicated that they were currently members of a fraternity/sorority (*n* = 38), and the remaining respondents noted that they had been in a fraternity/sorority in the past (*n* = 8). Fifty-five percent of respondents indicated that they were currently living on-campus in a residence hall (*n* = 347), while 27% indicated that they were living at home with their parents/guardians (*n* = 170). Twelve percent responded that they were living in a residence within five miles of campus with no parents/guardians (*n* = 73), with the remaining respondents identifying that they were living in a campus apartment or in a residence over five miles from campus with no parents/guardians (*n* = 15 and 29 respectively). Approximately 79% of the sample identified as Caucasian/White (*n* = 501), with 15% identifying as African/Black American (*n* = 93). The majority of the sample did not attend religious services regularly, with 72% of the respondents indicating that their frequency was less than or equal to once a month (*n* = 457). The remaining respondents signified that they attended religious services about 2-3 times a month or more (*n* = 175). Also, the vast majority of the respondents identified as heterosexual, with 96% of respondents indicating so on the SHS (*n* = 610). Only 1.2% identified as homosexual (*n* = 8), and 2.2% identified as bisexual (*n* = 14). One person identified as "other," but she did not provide an explanation for this response. Finally, in

regard to relationship status, 40% of respondents indicated that they were single and not dating (*n* = 252), while 48% noted that they were dating only one person (*n* = 302). Additionally, 7% signified that they were dating two or more people (*n* = 43), 3% noted that they were engaged (*n* = 20), and 2% were married (*n* = 15). Only one respondent indicated that she was divorced.

Sexual precursors, abuse, behaviors, and sequelae. The use of substances appears to not only increase the chance that individuals will engage in sexual activity, but to also increase the chances that this sexual activity will be of a risky nature (Cooper, 2002; Prince & Bernard, 1998; Smith & Brown, 1998). The respondents in this study were queried as to the frequency of sexual activity while under the influence of alcohol and drugs. Respondents were provided with five choices in order to rate the frequency of their alcohol use prior to/during sexual activity; if they had not engaged in any form of sexual activity, they were asked to leave the item blank. From the received surveys, 83% of the respondents (*n* = 526) completed this item. The data show that 44% of the respondents (*n* = 231) indicated that they had "never (0% of the time)" engaged in sexual activity while under the influence of alcohol. Additionally, 31% of the item respondents (*n* = 164) indicated that they had "rarely (under 25% of the time)" engaged in sexual activity while under the influence of alcohol. Of the remaining respondents to this item, 20% (*n* = 104) reported that they had "sometimes (25-74% of the time)" been under the influence of alcohol during sexual activity, while 4% (*n* = 22) reported "often (75-99% of the time)" and 2% reported "always (100% of the time)." In regards to drug use, respondents were again provided with five choices in order to rate the frequency of their drug use prior to/during sexual activity. If they had not engaged in any form of sexual activity, they were asked to leave the item blank. From the received surveys,

82% of the respondents (*n* = 520) completed this item. The data show that 83% of the respondents (*n* = 430) indicated that they had "never (0% of the time)" engaged in sexual activity while under the influence of drugs. Additionally, 10.5% of the item respondents (*n* = 55) indicated that they had "rarely (under 25% of the time)" engaged in sexual activity while under the influence of drugs. Of the remaining respondents to this item, 5% (*n* = 25) reported that they had "sometimes (25-74% of the time)" been under the influence of drugs during sexual activity, while 1.5% (*n* = 8) reported "often (75-99% of the time)," and only two people reported engaging in sexual activity while under the influence of drugs "always (100% of the time)."

Another item on the SHS asked respondents if they had ever engaged in "survivor sex," or sexual activity in order to procure food, shelter, money, or drugs, or exchanged these same items for sexual favors. There was a 93% response rate for this item (*n* = 589) and of the item respondents; only 1.5% (*n* = 9) indicated that they had engaged in this behavior. Respondents were also queried on whether sexual abuse had occurred in their pasts, whether they or a sexual partner had become pregnant, and whether they had ever been diagnosed with HIV/AIDS or a sexually transmitted disease/infection. Of the sample, approximately 8% of the respondents indicated that they had experienced sexual touching and/or attempted/actual sexual penetration against their will as a child (*n* = 9 males; 42 females). Also, 11% of the sample indicated that they had experienced sexual touching and/or attempted/actual sexual penetration against their will as an adult (*n* = 7 males; 64 females). Unfortunately, 2.6% of the respondents had experienced some form of sexual abuse during both age periods (*n* = 1 male; 16 females).

In regards to pregnancy, 8.1% of the sample indicated that they had been pregnant or that a sexual partner of theirs had been pregnant with their child (n = 51). Also, 5.5% of the respondents noted that at some point they had been diagnosed with HIV/AIDS or a sexually transmitted disease/infection (n = 35).

Tables 2 – 4 present sample statistics by gender on age of inception, number of partners, and condom/dental dam use for the assessed sexual behaviors. The gender by sexual behavior analyses demonstrate some differences between men and women on reported sexual behaviors. For age of inception, women reported a higher age at which they began receiving oral sex (M = 16.47) than men (M = 15.79). This statistical difference was significant at the $p < .001$ level. For number of partners, men and women differed on the number of reported partners for received oral sex and anal sex, with men reporting more partners (M = 4.92 and 2.39 partners respectively) than women (M = 2.96 and 1.41 partners respectively). The statistical difference for received oral sex partners was significant at the $p < .001$ level, while the statistical difference for anal sex partners was significant at the $p < .05$ level. Finally, for reported condom/dental dam use (i.e. 0 = never use; 5 = always use), men (M = 3.98 and 3.17 respectively) reported more condom/dental dam use for vaginal and anal sex than women (M = 3.57 and 1.99 respectively). The statistical difference for condom/dental dam use for vaginal sex was significant at the $p < .01$ level, while the statistical difference for condom/dental dam use during anal sex was significant at the $p < .001$ level.

Experimental Group Characteristics

Respondents were randomly assigned to one of four experimental groups for this study: postal self-administered questionnaire (Postal-SAQ), telephone administered

Table 2

Relationship Between Gender and Age of Inception

Behavior	*Gender*	M	SD	n	t
Oral Sex (performed)	Men	16.05	2.09	148	-1.66
	Women	16.35	1.66	305	
	Total	16.26	1.81	453	
Oral Sex (received)	Men	15.79	2.11	165	-3.66***
	Women	16.47	1.85	320	
	Total	16.24	1.97	485	
Vaginal Sex	Men	16.47	1.76	146	0.43
	Women	16.40	1.55	298	
	Total	16.43	1.62	444	
Anal Sex	Men	17.61	1.82	41	-1.82
	Women	18.47	2.68	73	
	Total	18.16	2.43	114	

*** = $p < .001$

Table 3

Relationship Between Gender and Number of Partners

Behavior	*Gender*	M	SD	n	t
Oral Sex (performed)	Men	4.01	6.17	147	0.66
	Women	3.67	4.37	304	
	Total	3.78	5.02	451	
Oral Sex (received)	Men	4.92	5.62	165	5.17***
	Women	2.96	2.73	318	
	Total	3.63	4.06	483	
Vaginal Sex	Men	5.26	1.76	147	0.39
	Women	4.92	1.55	296	
	Total	5.03	1.62	443	
Anal Sex	Men	2.39	3.76	41	2.12*
	Women	1.41	0.91	73	
	Total	1.76	2.40	114	

* = $p < .05$. *** = $p < .001$

Table 4

Relationship Between Gender and Condom/Dental Dam Use

Behavior	*Gender*	M	SD	n	t
Oral Sex (performed)	Men	1.52	1.19	151	-0.64
	Women	1.60	1.19	307	
	Total	1.57	1.19	458	
Oral Sex (received)	Men	1.30	0.92	164	0.79
	Women	1.24	0.79	319	
	Total	1.26	0.84	483	
Vaginal Sex	Men	3.98	1.22	147	3.13**
	Women	3.57	1.34	298	
	Total	3.71	1.31	445	
Anal Sex	Men	3.17	1.71	42	3.68***
	Women	1.99	1.63	73	
	Total	2.42	1.75	115	

Note. Condom/dental dam use was reported on a 5-point scale (1 = *Never - 0% of the time*, 5 = *Always - 100% of the time*).
** = $p < .01$. *** = $p < .001$

questionnaire (TAQ), electronic mail self-administered questionnaire (E-mail-SAQ), and Internet self-administered questionnaire (Internet-SAQ). Analysis of the demographic data demonstrates that the groups differ on only two demographic items: participation in a social fraternity/sorority, $F(3, 630) = 2.87$, $p < .05$, $\eta_p^2 = .01$, and sexual orientation, $F(3, 629) = 4.09$, $p < .01$, $\eta_p^2 = .02$.

Post hoc analysis of the data using the Tukey honestly significant difference (HSD) comparison on the social fraternity/sorority item indicates that only the TAQ ($M = 2.69$; $SD = .66$) versus E-mail-SAQ ($M = 2.88$; $SD = .48$) contrast was statistically significant ($p < .01$); however, the nominal nature of the data prevents further statistical inferences to be drawn. Visual interpretation of the data in Table 1 demonstrates that in the TAQ versus E-Mail-SAQ comparison, they are equivalent in the number of respondents indicating that they have been members of a social fraternity/sorority at one time (3 and 4 responses respectively). It appears that the statistical difference lies in the disparity between the other three possible responses. Despite an equal number of 126 for both groups, the responses indicating no history of membership in a social fraternity/sorority differ by 12 points in regards to the percentage of the total responses gathered (74% and 86% respectively). The other two possible responses demonstrate some difference in cumulative percentage that may play a role in the statistically significant difference between the TAQ and E-mail-SAQ, with a 6 percentage point difference for those that are a member of a social fraternity/sorority (9% and 3% respectively) and a 7 percentage point difference for those who note that they are planning on joining a social fraternity/sorority (15% and 8% respectively).

In regards to sexual orientation, post hoc analysis using the Tukey HSD comparison indicates that the E-mail-SAQ versus Postal-SAQ and E-mail-SAQ versus TAQ contrasts

were statistically significant ($p < .05$ and .01 respectively). Once again, the nominal nature of these data preclude drawing any further statistical inferences regarding the difference. Visual interpretation of the data in Table 1 demonstrates that the primary difference in these relationships appears to be the fact that 7 more respondents in the E-Mail-SAQ indicated their sexual orientation as bisexual than the Postal-SAQ and TAQ groups (1 respondent for both groups. See Table 1 for more information on the demographic qualities of each group.

Tests of Hypotheses

To test the hypotheses, univariate ANOVA tests were used to examine statistically significant differences between the administration methods on the target data. An additional analysis was added to each of the hypotheses in which the two "traditional" methods (e.g., Postal-SAQ, TAQ) were collapsed together and compared to the two more "technological" methods (e.g., E-mail-SAQ, Internet-SAQ).

The lack of a statistically significant difference of between-group means through traditional NHST methods does not necessarily suggest that the assessment methods are similar for the item of interest (Epstein et al., 2001). For this study, it is the case that while differences demonstrated by NHST may be significant, statistically demonstrated equivalencies are just as, if not more, important. Therefore, when possible, equivalency analyses using the confidence interval approach (Westlake, 1976, 1979) were conducted to determine if the assessment methods were statistically similar.

Hypothesis 1: Accuracy of data. Following the implied assumptions of sexual behavior research listed in Schroder et al. (2003), as well as the lack of a gold standard and the problems associated with behavioral observation, accuracy (i.e., the notion that the reported data matches actual data) was determined from the comparative analysis of the

mean responses to high-risk sexual behaviors on each assessment method. Univariate ANOVAs were conducted to determine whether statistical differences exist between the experimental groups on any of the items in which social desirability factors may play a role, specifically items 10-28 on the SHS.

Of those assessed, statistically significant group differences were observed on eight of the nineteen items: Item 11 - Adult sexual abuse, $F(3, 629) = 4.42$, $p < .01$, $\eta_p^2 = .02$; Item 14 - Age of inception for performing oral sex, $F(3, 449) = 3.27$, $p < .05$, $\eta_p^2 = .02$; Item 16 - Frequency of contraceptive use while performing oral sex, $F(3, 454) = 13.08$, $p < .001$, $\eta_p^2 = .08$; Item 17 - Age of inception for receiving oral sex, $F(3, 481) = 3.13$, $p < .05$, $\eta_p^2 = .02$; Item 19 - Frequency of contraceptive use while receiving oral sex, $F(3, 479) = 4.42$, $p < .01$, $\eta_p^2 = .03$; Item 22 - Frequency of contraceptive use while having vaginal sex, $F(3, 441) = 2.72$, $p < .05$, $\eta_p^2 = .02$; Item 27 - Frequency of sexual activity while under the influence of alcohol, $F(3, 522) = 3.27$, $p < .05$, $\eta_p^2 = .02$; and Item 28 - Frequency of sexual activity while under the influence of drugs $F(3, 516) = 3.63$, $p < .05$, $\eta_p^2 = .02$. Table 5 provides the means and standard deviations for each experimental group on these eight items and demonstrates that participants in the TAQ group provided, on average, responses that trended toward more desirable (i.e., older ages of inception, more contraception use, lower substance use). TAQ respondents also appeared to report lower rates of unwanted sexual penetration or attempted sexual penetration as an adult. Post hoc analysis using the Tukey HSD demonstrates that much of the statistical significant difference in these items is held in the difference between the TAQ group and the E-mail-SAQ group, with some of the significance being attributed to differences between the TAQ group and the Postal- and Internet-SAQ groups.

In the "traditional" versus "technological" comparison, statistically significant group differences were observed on seven of the nineteen items: Item 10 - Child sexual abuse, $F(1, 630) = 6.94$, $p < .01$, $\eta_p^2 = .01$; Item 14 - Age of inception for performing oral sex, $F(1, 451) = 9.74$, $p < .01$, $\eta_p^2 = .02$; Item 16 - Frequency of contraceptive use while performing oral sex, $F(1, 456) = 9.73$, $p < .01$, $\eta_p^2 = .02$; Item 17 - Age of inception for receiving oral sex, $F(1, 483) = 5.95$, $p < .05$, $\eta_p^2 = .01$; Item 22 - Frequency of contraceptive use while having vaginal sex, $F(1, 443) = 5.12$, $p < .05$, $\eta_p^2 = .01$; Item 27 - Frequency of sexual activity while under the influence of alcohol, $F(3, 524) = 6.10$, $p < .05$, $\eta_p^2 = .01$; and Item 28 - Frequency of sexual activity while under the influence of drugs $F(3, 518) = 6.88$, $p < .01$, $\eta_p^2 = .01$. Table 6 provides the means and standard deviations for each group on these seven items and demonstrates that participants who completed a more technological method provided responses that trended toward less desirable (i.e., younger ages of inception, less use of contraceptives, higher substance use). Technological method respondents also appeared to report higher rates of unwanted sexual penetration or attempted sexual penetration as a child.

Confidence interval equivalency analyses were conducted to determine if the methods of assessment are equivalent in terms of accuracy of data. Since statistically significant differences do not presume a lack of equivalency, all 19 items were assessed for equivalency. Table 7 presents the equivalency status for SHS items 10 - 28 for the five group comparisons that were analyzed. Due to their past use in assessing high-risk sexual behavior as well as their documentation in the literature, Postal-SAQ and TAQ were used as controls and E-mail- and Internet-SAQs were used as the experimental groups in these equivalency analyses. As in the traditional statistical analyses, the "traditional" versus "technological" comparison was also run with the "traditional" methods as the control. Equivalency criterion and confidence

Table 5

Relationship Between SHS Items Demonstrating Statistically Significant Group Differences and Experimental Group

	Experimental Group			
SHS Items	Postal-SAQ	TAQ	E-mail-SAQ	Internet-SAQ
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Adult Sexual Abuse	1.86 (0.35)$_b$	1.96 (0.20)$_a$	1.84 (0.37)$_b$	1.88 (0.32)$_b$
Age of Inception - POS	16.50 (1.73)$_a$	16.53 (1.62)$_a$	16.03 (1.90)$_b$	15.96 (1.94)$_b$
Freq. of Condom/DD Use – POS	1.33 (0.94)$_b$	2.13 (1.51)$_a$	1.47 (1.13)$_b$	1.34 (0.90)$_b$
Age of Inception – ROS	16.21 (2.13)	16.66 (1.60)$_a$	15.96 (2.09)$_b$	16.06 (1.97)
Freq. of Condom/DD Use - ROS	1.11 (0.53)$_b$	1.46 (1.07)$_a$	1.17 (0.66)$_b$	1.29 (0.90)
Freq. of Condom/DD Use – VS	3.78 (1.29)	3.90 (1.33)$_a$	3.42 (1.34)$_b$	3.70 (1.26)
Freq. of Sexual Activity – Alcohol	1.89 (0.84)	1.68 (0.91)$_a$	2.00 (1.04)$_b$	1.95 (0.91)
Freq. of Sexual Activity – Drugs	1.28 (0.65)	1.12 (0.46)$_a$	1.34 (0.85)$_b$	1.35 (0.63)$_b$

Note. Frequency behaviors were reported on a 5-point scale (1 = *Never - 0% of the time*, 5 = Always - *100% of the time*). POS = performed oral sex, ROS = received oral sex, DD = dental dam, VS = vaginal sex. Means in the same row that do not share subscripts differ by at lease $p < .05$ according to the Tukey honestly significant difference comparison. No subscript indicates a lack of statistical difference from the other groups.

Table 6

Relationship Between SHS Items Demonstrating Statistically Significant Group Differences and Collapsed Experimental Groups

	Collapsed Experimental Group		
SHS Items	Traditional	Technological	
	M (SD)	*M (SD)*	*p<*
Child Sexual Abuse	1.95 (0.22)	1.89 (0.31)	0.01
Age of Inception - POS	16.52 (1.67)	15.99 (1.92)	0.01
Freq. of Condom/DD Use – POS	1.75 (1.33)	1.40 (1.02)	0.01
Age of Inception – ROS	16.45 (1.89)	16.01 (2.03)	0.05
Freq. of Condom/DD Use – VS	3.84 (1.31)	3.56 (1.30)	0.05
Freq. of Sexual Activity – Alcohol	1.78 (0.89)	1.98 (0.98)	0.05
Freq. of Sexual Activity – Drugs	1.19 (0.56)	1.34 (0.74)	0.01

Note. Frequency behaviors were reported on a 5-point scale (1 = *Never - 0% of the time*, 5 = Always - *100% of the time*). POS = performed oral sex, ROS = received oral sex, DD = dental dam, VS = vaginal sex.

Table 7

Equivalency Comparisons for Target Items on the Sexual History Survey

	P vs. E	P vs. I	T vs. E	T vs. I	Trad vs. Tech
Item 10	Q	Q	Q	Q	Q
Item 11	Q	Q	Q	Q	Q
Item 12	Q	Q	Q	Q	Q
Item 13	Q	Q	Q	Q	Q
Item 14	Q	Q	Q	Q	Q
Item 15	NQ	NQ	NQ	NQ	NQ
Item 16	NQ	NQ	NQ	NQ	NQ
Item 17	Q	Q	Q	Q	Q
Item 18	NQ	NQ	NQ	NQ	NQ
Item 19	Q	NQ	NQ	NQ	Q
Item 20	Q	Q	Q	Q	Q
Item 21	NQ	NQ	NQ	NQ	NQ
Item 22	Q	Q	Q	Q	Q
Item 23	Q	Q	Q	Q	Q
Item 24	NQ	NQ	NQ	NQ	NQ
Item 25	NQ	NQ	NQ	NQ	NQ
Item 26	Q	Q	Q	Q	Q
Item 27	Q	Q	NQ	NQ	Q
Item 28	Q	Q	NQ	NQ	NQ

Note. P = Postal-SAQ, T = TAQ, E = E-mail-SAQ, I = Internet-SAQ, Trad = Traditional, Tech = Technological, Q = equivalent, NQ = not equivalent.

Table 8

Item Attributes for Traditional and Equivalency Testing

	Stat. Diff. Between Groups	Stat. Diff. Traditional vs. Technological	Equivalent in All Comparisons	Not-Equivalent in All Comparisons	Number of Equivalent Comparisons
Item 10		X	X		
Item 11	X		X		
Item 12			X		
Item 13			X		
Item 14	X	X	X		
Item 15				X	
Item 16	X	X		X	
Item 17	X	X	X		
Item 18				X	
Item 19	X				2 of 5
Item 20			X		
Item 21				X	
Item 22	X	X	X		
Item 23			X		
Item 24				X	
Item 25				X	
Item 26			X		
Item 27	X	X			3 of 5
Item 28	X	X			2 of 5

Note. Stat. Diff. = Statistically Significant Difference per traditional null-hypothesis significance testing.

intervals for each group comparison can be found in Appendix U. Equivalence was demonstrated among all five group comparisons for Item 10 – Child sexual abuse, Item 11 – Adult sexual abuse, Item 12 – Pregnancy, Item 13 – HIV/AIDS or STDs, Item 14 – Age first performed oral sex, Item 17 – Age first received oral sex, Item 20 – Age first engaged in vaginal sex, Item 22 – Frequency of contraceptive use during vaginal sex, Item 23 – Age first engaged in anal sex, and Item 26 – Engaged in survival sex. Table 8 presents the 19 items and their status on the NHST and equivalency testing. This table demonstrates that while some of these items may have demonstrated a statistically significant group difference when included in traditional null hypothesis testing (e.g., Items 10, 11, 14, 17, and 22); confidence interval equivalence testing reveals that these items continue to demonstrate equivalency across the different assessment methods, even when collapsed into "traditional" versus "technological." The opposite is true for Items 15, 16, 18, 21, 24, and 25. Through confidence interval equivalency testing, these items were found to lack equivalence between the different assessment methods despite the fact that they did not demonstrate statistically significant group difference when compared via traditional statistical methods. Items 19, 27, and 28 demonstrated both equivalence and non-equivalence in the group comparisons.

Hypothesis 2: Item response rate. Almost as important as whether a respondent chooses to respond to a high-risk sexual behavior in a favorable manner is whether the respondent chooses to respond at all. Omissions of items affect the quality of the data whether the omission was purposeful or not. The items on the SHS were divided into three categories: demographic items (items 1-9), high-risk sexual behavior items (items 10-28), and feedback items (items 29-33). In the demographic and feedback categories, answers were expected on all items. Items in the high-risk sexual behavior category required a

response only if the respondent had engaged in the behavior. Univariate ANOVAs were conducted to determine the relationship of experimental groups to the number of item omissions on the SHS as a whole, as well as in each of the three item groups. Results demonstrate that the groups differ in a statistically significant manner on item response rate for the entire SHS $F(3, 631) = 4.05$, $p < .01$, $\eta_p^2 = .02$. Post hoc analyses using the Tukey HSD test indicate that the statistically significant difference is accounted for in the mean difference between the TAQ and both the Postal-SAQ and the Internet-SAQ, with the TAQ having significantly fewer item omissions on average. When collapsed into "traditional" and "technological" methods, the data fail to demonstrate a statistically significant difference, $F(1, 633) = 1.47$, $p > .05$, $\eta_p^2 = .00$.

For item response rates on the three item categories, no group differences were observed for the demographic and feedback items. However, a statistically significant difference was observed between the experimental groups in the item response rate of the high-risk sexual behavior items $F(3, 631) = 4.80$, $p < .01$, $\eta_p^2 = .02$. Post hoc analyses using the Tukey HSD test indicate that the statistically significant difference is accounted for in the mean difference between the TAQ and both the Postal-SAQ and the Internet-SAQ in the high-risk sexual behavior item category. Means and standard deviations for the entire SHS item response rate and the item response rates of the three item categories are reported in Table 9. When the collapsed "traditional" and "technological" groups are compared on the three item categories, no significant differences exist between the two assessment method clusters.

Confidence interval equivalency analyses were conducted to determine if the methods of assessment are equivalent in terms of item response rate. Equivalency criterion and

confidence intervals for each group comparison can be found in Appendix V. Since statistically significant differences do not presume a lack of equivalency, all three item categories were assessed for equivalency. Analyses demonstrate that no equivalency exists between any comparisons in the three item groups.

Hypothesis 3: Unit response rate. Assessment methods were also compared and contrasted in terms of completed surveys per method (i.e., unit response rate). The TAQ respondents completed 87% of the available SHS (N = 169) for the highest unit response rate of the four methods. The Internet-SAQ condition elicited the next highest unit response rate with completion of 85% of the administered surveys (N = 166). The Postal-SAQ group had the next highest unit response rate by returning 79% of the delivered surveys (N = 153). Finally, the E-mail-SAQ condition had the lowest unit response rate by responding to 75% of the administered surveys through this condition (N = 147). A Univariate ANOVA was used to determine the relationship between experimental groups on the number of returned and/or completed surveys. A variable was dummy-coded to account for surveys that were not received and for surveys that were. Statistically significant differences existed between the experimental groups in regards to unit response rate $F(3, 776) = 3.75$, $p < .05$, $\eta_p^2 = .01$. Post hoc analysis using the Tukey HSD test indicates that the mean difference between the TAQ and E-mail-SAQ is statistically significant at the $p < .05$ level and appears to account for much of the variance. When the assessment methods are collapsed into the "traditional" and "technological" categories, there was no longer a statistically significant difference $F(1, 778) = 0.69$, $p > .05$, $\eta_p^2 = .00$. Confidence interval equivalency analyses were conducted to determine if the methods of assessment are equivalent in terms of unit response rate. Table 10 presents the unit response rate

Table 9

Relationship Between Item Response Rate and Experimental Group

	Experimental Group			
Item Categories	Postal-SAQ	TAQ	E-mail-SAQ	Internet-SAQ
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Sexual History Survey (Items 1-33)	$0.42\ (1.66)_b$	$0.03\ (0.20)_a$	0.28 (0.66)	$0.36\ (1.25)_b$
Demographic (Items 1-9)	0.02 (0.18)	0.01 (0.08)	0.03 (0.18)	0.02 (0.23)
HRSB (Items 10-28)	$0.38\ (1.54)_b$	$0.01\ (0.11)_a$	0.22 (0.61)	$0.30\ (0.88)_b$
Feedback (Items 29-33)	0.01 (0.11)	0.01 (0.11)	0.03 (0.16)	0.04 (0.42)

Note. HRSB = High-Risk Sexual Behavior. Means in the same row that do not share subscripts differ by at least $p < .05$ according to the Tukey honestly significant difference comparison. No subscript indicates a lack of statistical difference from the other groups.

Table 10

Equivalency Data for Unit Response Rate Group Comparisons

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.16	-0.04 to 0.10	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.16	-0.13 to -0.01	Equivalent
TAQ vs. E-Mail-SAQ	± 0.17	0.06 to 0.18	Not Equivalent
TAQ vs. Internet-SAQ	± 0.17	-0.04 to 0.08	Equivalent
Traditional vs. Technological	± 0.17	-0.02 to 0.08	Equivalent

equivalency status for the five control versus experimental group comparisons. As Table 10 indicates, four of the five group comparisons demonstrate equivalence with a confidence interval of 20% of the control group mean. The only control vs. experimental group comparison that did not demonstrate equivalence was the TAQ versus the E-Mail-SAQ, with the TAQ having a higher response rate overall. When the assessment methods are collapsed into "traditional" versus "technological" groups and run through a confidence interval equivalency analysis, data demonstrates that the two groups are statistically equivalent in regards to unit response rate.

Hypothesis 4: Intrusiveness of method. While the investigator can go to great measures to maintain privacy and/or anonymity, the level of intrusiveness felt by the respondents may be even more important. A univariate ANOVA was used to determine the relationship between experimental groups on the reported level of intrusiveness. Results

demonstrate no statistically significant difference between the groups on perceived intrusiveness, $F(3, 629) = 1.20$, $p > .05$, $\eta_p^2 = .01$. The lack of statistical significance remains when the four groups are collapsed into "traditional" versus "technological" comparison, $F(1, 631) = 0.40$, $p > .05$, $\eta_p^2 = .00$.

Confidence interval equivalency analyses were conducted to determine if the methods of assessment are equivalent in terms of perceived intrusiveness. Table 11 presents the equivalency status for perceived intrusiveness for the five control versus experimental group comparisons. As Table 11 indicates, all five group comparisons demonstrate equivalence with a confidence interval of 20% of the control group mean. This data, coupled with the demonstrated lack of statistical significance from the traditional NHST statistics, suggests that these groups are equivalent in terms of the perceived intrusiveness of the assessment methods.

Table 11

Equivalency Data for Perceived Intrusiveness Group Comparisons

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.56	-0.30 to 0.16	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.56	0.21 to 0.23	Equivalent
TAQ vs. E-Mail-SAQ	± 0.61	-0.07 to 0.37	Equivalent
TAQ vs. Internet-SAQ	± 0.61	0.00 to 0.42	Equivalent
Traditional vs. Technological	± 0.17	0.10 to 0.22	Equivalent

Hypothesis 5: Enjoyment of method. Considering that the actual assessment method may play a role in item and unit response rate, as well as accuracy of data, respondents were queried as to the level of enjoyment experienced while completing their particular assessment method. In addition, they were asked if given the option, which of the four assessment methods they would choose if readministered the SHS. A univariate ANOVA was used to determine the relationship between experimental groups on the level of enjoyment for that particular assessment method. Results demonstrate that a statistically significant difference exists between the groups on level of enjoyment, $F(3, 629) = 12.14$, $p < .001$, $\eta_p^2 = .06$. Post hoc analysis using the Tukey HSD test indicates that the mean differences between the TAQ ($M = 2.37$) and the Postal-, E-mail-, and Internet SAQ methods ($M = 2.02$, 1.95, and 1.74 respectively) are statistically significant at the $p < .01$ and .001 levels. In addition, the mean difference between the Postal-SAQ and the Internet-SAQ methods is also statistically significant at the $p < .05$ level. When collapsed into the "traditional" and "technological" categories, the statistically significant difference remains, $F(1, 631) = 22.18$, $p < .001$, $\eta_p^2 = .03$.

Confidence interval equivalency analyses were conducted to determine if the methods of assessment are equivalent in terms of level of enjoyment. Table 12 presents the equivalency status for level of enjoyment for the five control versus experimental group comparisons. As Table 12 indicates, only one of the five group comparisons (e.g., Postal-SAQ vs. E-mail-SAQ) demonstrated equivalence with a confidence interval of 20% of the control group mean. The failure of the other comparisons to demonstrate equivalence, particularly the "traditional" versus "technological" comparison, coupled with statistically significant differences demonstrated by the univariate ANOVA analysis, suggests that most

of the groups are unique in regards to level of enjoyment of that particular assessment method.

Table 13 presents the relationship between experimental group and preferred assessment method for readministration. As the table demonstrates, in most groups respondents chose the method that they had completed as their preferred survey method in the future; however, this was not the case for those that were in the TAQ group. Only 28% of those that completed the TAQ would prefer that method if readministered the SHS. This is compared to 68, 71, and 88 percent same method preference for the other three groups

Table 12

Equivalency Data for Enjoyment of Method Group Comparisons

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.40	-0.12 to 0.26	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.40	0.11 to 0.45	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.47	0.23 to 0.61	Not Equivalent
TAQ vs. Internet-SAQ	± 0.47	0.46 to 0.80	Not Equivalent
Traditional vs. Technological	± 0.17	0.23 to 0.49	Not Equivalent

(i.e., Postal-SAQ, E-mail-SAQ, and Internet-SAQ respectively). In addition, 69% of the total sample indicated a preference for a more technological assessment method (e.g., E-mail-SAQ, Internet-SAQ), as opposed to the more traditional methods (e.g., Postal-SAQ, TAQ). As indicated in Table 13, the Internet-SAQ respondents were the most loyal, with 88%

Table 13

Relationship Between Experimental Group and Survey Format Preference

	Survey Format Preference				
Experimental Group	Postal-SAQ	TAQ	E-mail-SAQ	Internet-SAQ	Total
	N (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)
Postal- SAQ	102 (68)	0 (0)	23 (15)	26 (17)	151 (100)
TAQ	29 (17)	47 (28)	53 (32)	39 (23)	168 (100)
E-mail-SAQ	11 (8)	2 (1)	103 (71)	30 (20)	146 (100)
Internet-SAQ	2 (1)	1 (1)	17 (10)	145 (88)	165 (100)
Total	144 (23)	50 (8)	196 (31)	240 (38)	630 (100)

preferring this method at readministration, while the E-mail-SAQ respondents were the second-most loyal (71%). Interestingly, of those who participated in the more technological methods, only 16 out of 311 respondents (5%) indicated a preference for one of the more traditional methods if readministered the SHS.

Hypothesis 6: Use of resources. In order to compare and contrast between the five methods, the total cost per response was tracked for each method, as was the unique amount of time necessary for each response on each assessment method. Table 14 presents the use of resources for each assessment method.

Respondent Completion Time was acquired via an item on the SHS asking each respondent approximately how long in took them to complete the questionnaire. A univariate ANOVA on this data indicates that there is a statistically significant difference between the respondent completion time for the assessment methods, $F(3, 641) = 8.16$, $p < .001$, $\eta_p^2 = .04$. Post hoc analyses using the Tukey HSD test indicate that the statistically significant difference is accounted for by the mean differences between the E-Mail-SAQ ($M = 6.83$ min.) and both the Phone-SAQ ($M = 5.92$ min.) and the Internet SAQ ($M = 5.18$ min.), as well as the mean differences between the TAQ ($M = 6.24$ min.) and the Internet-SAQ. Examiner time per response for the different experimental groups was unable to be compared statistically due to the manner in which the data were collected. Examiner time response was determined by summing the average amount of time it took the principal investigator to complete each aspect of the assessment method that was unique from the other methods. Since it is difficult to time each and every aspect of each method (i.e., actual amount of time to code each response, actual amount of time used calling unanswered phones), these data were created using average amounts of time per response used, therefore eliminating

Table 14

Relationship Between Resource Use and Experimental Group

	Experimental Group			
Resources	Postal-SAQ	TAQ	E-mail-SAQ	Internet-SAQ
	M	*M*	*M*	*M*
Respondent Completion Time	5.92	6.24[1]	6.83	5.18
Examiner Time Per Response	1.35	7.48[1]	1.00	0.88
Cost Per Response	2.07	0.51	0.00	0.54

Note. "Respondent Completion Time" and "Examiner Time Per Response" are listed in minutes. "Cost Per Response" is listed in United States Dollars.

[1] Totals differ due to additional examiner time needed for hang-ups and lack of availability of respondents at certain times.

variability. As indicated above, each assessment method required different amounts of time for the tasks that were unique to that method. As the data show in Table 14, clearly the method that used the most amount of examiner time per response was the TAQ method (*M* = 7.48 min.). This was due to the need of the examiner to conduct the interview and call potential respondents numerous times until they were available. Postal-SAQ demonstrates the next highest amount of examiner time per response (*M* = 1.35 min.) due mostly to administrative activities associated with mailing an item (e.g., stuffing and sealing envelopes, labeling, delivery), as well as coding and entering data. E-mail-SAQ required only about a minute of examiner time per response received (*M* = 1.00 minutes). This time was spent formatting the e-mail form of the SHS, coding responses and entering data into the database. Finally, Internet-SAQ demonstrates the lowest use of examiner time per response (*M* = 0.88 min.). The Internet-SAQ utilized examiner time by creating a web-version of the SHS, entering e-mail addresses to send web links, and formatting the received electronic data. While less than one minute of examiner time per response received, this lower mean is likely due to the higher unit response rate of this method in comparison to the E-mail-SAQ. In fact, both formats took about the same amount of time to prepare and complete.

As was the case with examiner time per response, the relationship between experimental groups on total cost per response could also not be analyzed statistically. Total unique costs[3] for each format were divided by the responses received and therefore eliminated variability. As Table 14 demonstrates, the Postal-SAQ delivered the highest cost

[3] Because the four assessment methods shared many procedural steps and had identical costs associated these shared steps, only costs that were unique to that particular assessment method were totaled.

per response of the four methods (*M* = $2.07). The vast majority of these funds were used to purchase mailing materials and appropriate amounts of postage. It is also the case that the cost per response could have been much higher as the postage-free Campus Mail system was used to deliver the Postal-SAQs to those living in the residence halls. The Internet-SAQ demonstrated the next highest cost per response (*M* = $0.54). This cost was solely accounted for by three months of membership and additional security features to SurveyMonkey. The TAQ presents the next highest cost per response (*M* = $0.51). Also, this cost per response was accounted for only by long-distance charges (i.e., 6.9 cents a minute). Finally, there were no unique or additional costs associated with the E-mail-SAQ.

Tangentially related to the use of resources is the speed at which responses were received. Table 15 presents a flow chart of when responses were received for each method. The TAQ method is included in the table but is not suitable for visual comparisons as mostly the principal investigator, not the respondents, determined the rate of response. As the table demonstrates, 59% of the Internet-SAQ responses were received on the first day of the study, as opposed to 51% of the E-mail-SAQ responses and none of the Postal-SAQ responses due to standard postal delays. After two days, the Internet-SAQ and the E-mail-SAQ had elicited 67% of their total responses. As Table 15 demonstrates, it took the Postal-SAQ method ten days to elicit the number of responses that it took the E-mail- and Internet-SAQs only two days to elicit. At this ten-day point, the E-mail- and Internet-SAQ methods had received 84% and 82% of their total responses, respectively. It is important to note that the use of the Campus Mail system allowed Postal-SAQs to be received on the third day of the study. Complete reliance on the USPS would likely have led to an additional one- to two-day delay.

Table 15

Relationship Between Response Rate and Experimental Group

Date	Procedural Steps Introduced	Postal-SAQ	TAQ	E-mail-SAQ	Internet-SAQ
10/17/2005	Surveys and web links delivered	0	12	78	99
10/18/2005		0	10	25	15
10/19/2005		14	10	7	11
10/20/2005		31	5	7	3
10/21/2005		15	10	1	3
10/22/2005		8	16	1	2
10/23/2005		0	18	2	0
10/24/2005		14	11	3	4
10/25/2005		11	4	2	2
10/26/2005		10	6	2	0
10/27/2005		4	0	1	0
10/28/2005		5	0	0	1
10/29/2005		4	19	0	0
10/30/2005		0	11	2	0
10/31/2005	E-mail/postcard reminders sent	2	1	8	10
11/1/2005		3	0	3	3
11/2/2005		3	10	3	5
11/3/2005		2	0	4	2
11/4/2005		3	5	1	1
11/5/2005		3	15	0	0
11/6/2005		0	14	1	1
11/7/2005		1	0	0	0
11/8/2005		1	0	0	0
11/9/2005		1	0	0	0
11/10/2005		4	0	0	0
11/11/2005		0	0	0	1
11/12/2005		1	0	1	0
11/13/2005		0	6	0	0
11/14/2005		0	0	0	1
11/15/2005		0	0	0	1
11/16/2005		3	0	0	2
11/17/2005		0	0	1	0
11/18/2005		0	0	0	0
11/19/2005		1	0	0	0
11/20/2005		0	2	0	0
11/21/2005		2	0	0	0
11/22/2005	Thank yous & follow-ups sent	0	0	0	0
11/22/2005 -	11/30/2005	2	0	0	2
Total Surveys Collected =		148	185	153	169

Discussion

The assessment of high-risk sexual behavior has been a developing process ever since Kinsey's research highlighted the importance of gathering this data via the interview format. High-risk sexual behavior assessment has graduated from the lengthy qualitative interviews conducted by Kinsey and his colleagues (Kinsey et al., 1948; Kinsey et al., 1953) to the widely used paper-and-pencil questionnaires administered via self-administration (Catania et al., 1993; Couper & Stinson, 1999; Coxon, 1999) or through postal administration (Rolnick et al., 1989) and methods utilizing the telephone (Weinhardt et al., 1998a). With the advances in technology and the apparent advantages that these methods appear to hold, it seems that high-risk sexual behavior assessment is destined to progress and utilize these advancements. While very few studies have explored the technological methods and their utility in high-risk sexual behavior assessment, this study was developed to discover if these methods differed from, or were equivalent to, the more traditional methods.

Summary of Results

Hypothesis 1: Accuracy of data. Due to the lack of a gold standard in the assessment of high-risk sexual behavior, it is assumed that assessment methods obtaining higher levels of high-risk sexual behaviors are attaining more accurate and representative data (Biemer, 1988; Jaccard et al., 2002; Schroder et al., 2003). In this study, respondents were asked to complete 19 items (i.e., SHS items 10-28) that assessed high-risk sexual behaviors. When subjected to traditional NHST via univariate ANOVAs, eight of the nineteen items demonstrated statistically significant differences between the groups. These items assessed past sexual abuse as an adult, age of inception, frequency of condom/dental dam use, and frequency of sexual behavior while under the influence of alcohol and/or drugs. Post hoc analyses

demonstrated that the TAQ respondents consistently were divergent from the respondents of the other methods in a more socially desirable manner. When collapsed into a "traditional" (i.e., Postal-SAQ and TAQ) versus "technological" (i.e., E-mail-SAQ and Internet- SAQ) NHST analysis, six of the eight items remained statistically significant, with the addition of one more item (e.g., past child sexual abuse) also demonstrating statistically different relationship. In each of these cases, the traditional methods demonstrated more socially desirable response patterns than the technological methods.

Equivalency analyses were run to determine if other items were equivalent statistically if they did not differ via traditional NHST. Ten of the 18 items demonstrated equivalence in all five equivalency comparisons that were analyzed. However, of these ten items, three also demonstrated statistically significant differences via traditional NHST, and two others (e.g., past child and adult sexual abuse) demonstrated statistically significant differences through NHST in either the four-group analysis or the "traditional" versus "technological" analysis. In total, this leaves four items demonstrating statistically significant differences via traditional NHST with data supporting the more technological assessment methods and five other items demonstrating statistically significant equivalencies among all group comparisons. While not ideal, this suggests that the more technological methods may hold some promise for being, at the very worst, equivalent to the more utilized methods in high-risk sexual behavior assessment and possibly even better in attaining accurate data in some cases.

Overall, the results appear to be inconsistent in regards to the relationships between the different assessment methods on these nineteen items. Some demonstrated statistically significant differences through traditional NHST, and others demonstrated equivalence via

confidence interval equivalency analysis. Further, some items demonstrated contradictory results by demonstrated differences via traditional NHST and equivalence. One explanation is the nature of the questions and the interplay between the sensitivity of the NHST and the lack of sensitivity of the equivalency analysis. Two examples are the abuse items. Each demonstrated statistically significant difference through traditional NHST and then demonstrated equivalency through equivalency analysis. Due to the nature of these questions, very few individuals were unfortunate enough to have experienced these traumas. This led to means that were very similar. However, the univariate ANOVA that was conducted was able to utilize the combined power of the groups in its analysis, while the equivalency analysis compared only two groups at a time in five different individual comparisons. The lack of power in this analysis allowed equivalency to be determined due to very similar means.

Nonetheless, some important information can be construed from the data. Across the board, the TAQ method demonstrated means on the target items that were more consistent with socially desirable responding. Also, on many of the items, the means for the Postal-SAQ were trending toward more socially desirable responding than the two more technological methods. While it is conjecture at best, these trends suggest that the more technological methods may hold some promise in obtaining more "accurate" self-response data in regards to high-risk sexual behavior.

Hypothesis 2: Item response rate. Another important component of an assessment method is its ability to elicit complete responding on all of its items (Catania et al., 1995; Schonlau et al., 2002). Item response rate denotes the number of items omitted on average for a particular assessment method. An assessment method that elicits a high item response

rate would therefore be held in higher regard than other methods with lower item response rates. For this study, item response rate was assessed for three separate item categories on the SHS: demographic, high-risk sexual behavior, and feedback items. Each of these item categories was submitted to traditional NHST through a univariate ANOVA. Results demonstrated a statistically significant difference between the assessment methods on the SHS overall and the HRSB items. Post hoc analyses demonstrated that the primary reason for this significant difference is due to the very low number of average missing items on the TAQ condition, which is consistent with the literature (Bajos et al., 1992; Catania et al., 1990; Catania et al., 1993; Czaja, 1987-1988; Rogers, 1976). In regards to equivalency, no equivalent relationships are found in any of the comparisons conducted via confidence interval equivalency analysis.

As expected, the TAQ condition demonstrated very high item response rates when compared to the other assessment methods and stands alone as the best assessment method in obtaining high item response rates. This is primarily due to the interview nature of the interaction and the demand characteristics that this interaction conveys. The other assessment methods are self-administered by nature and therefore are more open to item refusals by respondents. These issues support the case to compare only the three self-administration methods during statistical analysis. When the TAQ condition is removed, the results demonstrate no statistically significant differences between the three remaining groups on any of the three item-response categories.

The lack of equivalency is also expected due to the divergent item response rate put forth by the TAQ condition; however, the equivalency analyses were found to be susceptible to very low mean comparisons. In many of the equivalency comparisons between the

groups, the very low means for missing items caused a lack of equivalency to be found due to the very low confidence interval. The confidence interval is directly related to the mean of the control condition. When this mean is very low (e.g., 0.01 items refused on average), the analysis becomes overly sensitive and demonstrates lack of equivalence in almost all cases except for those with exactly the same means. This suggests that confidence interval equivalency analysis may not be appropriate in situations in which means are very low.

Hypothesis 3: Unit response rate. While item response rate is important, obtaining completed responses is one of the primary goals of any assessment method (Dillman, 2000; Heberlein & Baumgartner, 1978; Schonlau et al., 2002). Unit response rate is the percentage of completed measures received from those that were administered; therefore, a method with a high unit response rate would be found to be more desirable for use in assessment due to the likelihood of obtaining more completed responses. For this study, unit response rate was analyzed to determine if the methods differed overall and/or were equivalent in nature.

Traditional NHST results demonstrated a statistically significant difference in the unit response rates of the four assessment methods. Post hoc analysis suggests that much of the variance is accounted for by the mean difference between the TAQ condition, which had the highest unit response rate, and the E-mail-SAQ condition, which had the lowest unit response rate. Further, the rate of the Internet-SAQ was very close to that of the TAQ group (85% and 87% respectively). In fact, when collapsed into "traditional" versus "technological" comparisons, the differences are no longer observed.

While it was expected that no statistically significant differences would exist, if they did it was predicted that the Internet-SAQ would stand out as the one with the highest unit response rate. The reason for the high response rate of the TAQ condition can be found in

the methodology. Unlike the other three assessment methods, which relied on self-administration, the TAQ condition relied on the principal investigator contacting the individuals; therefore, the unit response rate of the TAQ condition is directly related to the perseverance of the principal investigator. In fact, the determination of the principal investigator was such that some individuals were contacted more than ten times in order to speak to them in person to complete the SHS. This is much different than the single reminder e-mail and postcard that the other groups received. Also, this condition was not privy to other problems associated with self-administration, including loss or deletion of survey, deletion of e-mails with web addresses, and even forgetfulness. These issues support the case to compare only the three self-administration methods during statistical analysis. When the TAQ condition is removed, the results demonstrate that there is not a statistically significant difference between the three experimental groups on unit response rate.

As the equivalency analyses indicate, four of the five comparisons were found to demonstrate equivalence. The only "not equivalent" finding was in the TAQ versus E-mail-SAQ comparison, which is also the major contributor to the statistically significant differences observed in the traditional NHST. Since it appears that the problems associated with the TAQ make it difficult to draw comparisons to one another, when it is removed we find that the remaining measures are equivalent to one another. Therefore, this suggests that at worst the technological methods are equivalent in terms of unit response rate. However, the trends observed in the means provide quite a bit of support for the Internet-SAQ. While not statistically different, the 85% unit response rate is quite a bit higher than the Postal- and E-mail-SAQ methods (79% and 75% respectively).

Hypothesis 4: Intrusiveness of method. When assessing sensitive topic areas, it is of utmost importance to take into account how anonymous the responses will be and to what degree privacy will be maintained (Gallant, 1985; Jones & Forrest, 1992; Locke & Gilbert, 1995; Turner et al., 1995; Turner et al., 1992). In this study, the methodology was such that anonymity was not possible; therefore, privacy needed to be maintained. Considering the subjective nature of privacy, respondents were asked to report the level of intrusiveness that they felt when completing their assigned measure. As expected, the results demonstrated that there are no statistically significant differences between the four assessment methods on perceived intrusiveness. This is also the case when the methods are collapsed into the "traditional" versus "technological" comparison. The same holds for the equivalency analyses, which demonstrated equivalence in all five comparisons.

These results suggest that in regard to perceived intrusiveness, the four methods are equivalent and the more technological methods demonstrate similar levels of intrusiveness to the more traditional methodologies. This is somewhat divergent from research on more technological assessment methods that suggest a lower degree of perceived intrusiveness and a higher degree of privacy (Hewson et al., 1996; Millstein & Irwin, 1983).

Hypothesis 5: Enjoyment of method. While assumed accuracy and response rates are important determinants of the effectiveness of a measure and its administration method, how well respondents enjoy taking a measure via a specific method is an initiating factor in both accuracy and response rates (Booth-Kewley et al., 1992; Honaker et al., 1988; Locke & Gilbert, 1995; Robinson & West, 1992). For this study, respondents were asked to rate the level of enjoyment they experienced while completing the measure in their assigned method and what method they would prefer if the SHS were to be readministered.

Results show that respondents reported different levels of enjoyment dependent upon the administration method to which they were assigned. The traditional NHST and post hoc analysis demonstrated that the TAQ was found to be less enjoyable by those who completed it when compared to the respondents from the other groups. Overall, the Internet-SAQ respondents demonstrated a higher level of enjoyment to the other methods. When collapsed into "traditional" versus "technological" methods, a statistically significant difference was also found and reveals that the respondents of the "technological" methods enjoyed their method of assessment more so than the "traditional" respondents. Equivalency analyses also demonstrated a lack of equivalence in four of the five comparisons, and the only comparison found to be equivalent was the Postal-SAQ versus E-mail-SAQ comparison. These results suggest that while statistical differences exist between the measures on perceived enjoyment of the respondents, they are also not equivalent to one another, apart from the single aforementioned comparison.

In regards to assessment method choice upon readministration, the results demonstrated that only the TAQ group was found to have a majority of respondents wishing to take the SHS through another assessment method. The data suggest that in the other cases, respondents would rather complete the SHS via the method with which they were familiar. However, the TAQ respondents demonstrated more interest in the technological methods for readministration. Of particular interest is the apparent loyalty of those who participated in a more technological method. Of the 311 respondents that completed the SHS in the E-mail- and Internet-SAQ conditions, only 16 (5%) expressed a desire to complete a more traditional method (i.e., Postal-SAQ or TAQ). This is compared to 141 of 319 (44% total: 32% of Postal-SAQ respondents and 55% of TAQ respondents) "traditional" respondents requesting

a more technological method upon readministration. There was a moderate amount of method loyalty among the Postal-SAQ, with 68% of those requesting the same method upon readministration; however, as mentioned above, the remaining 32% requested one of the "technological" methods. Assuming that people are much more comfortable participating in something with which they are familiar, these results are quite eye-opening and show strong support for use of more technological methods in order to increase participation and response rates.

Results from these two analyses appear to lend a strong amount of support for the use of more technological methods of administration, particularly the use of the Internet. Internet-SAQ respondents demonstrated the highest levels of method enjoyment and a very high amount of loyalty to using the Internet upon readministration. Once again, results also suggest the lack of utility that the TAQ method holds. With the lowest levels of method enjoyment by respondents and a very low level of method loyalty (e.g., 28%), the data appear to suggest that respondents have very little interest in completing a measure in this manner.

Hypothesis 6: Use of resources. While we would hope that many of the above qualities of assessments are taken into account when deciding which administration method to choose, it is often the case that the choice is made simply due to resources that will be utilized by a particular method (Biemer, 1988; Booth-Kewley et al., 1992). While it is the expectation that all of these qualities will be acknowledged in assessment method choice, use of resources is an important determining factor. This study examined four areas of resource use: respondent completion time, examiner time, total unique cost, and speed at which responses were received.

Traditional NHST shows that the methods do differ in a statistically significant manner on respondent completion time. Means demonstrate that the E-mail-SAQ required the most respondent time, while the Internet-SAQ required the least respondent time to complete. It is also important to note that all of these methods, except for the TAQ (i.e., time noted upon completion by the principal investigator), relied upon time estimates by the respondent, without a directional cue to note start time. Reasons for these differences likely lie in the unique aspects of each mode of administration. Possible reasons for the longer time to complete the E-mail-SAQ are that respondents needed to type in their responses and scroll up and down the email. Another possible reason for the extended amount of time could be other distracting things occurring while on the Internet (e.g., multiple web pages open, chatting with people); however, these confounds would likely be the same for the Internet-SAQ. While it is not known why the Internet-SAQ demonstrated such a low response completion time, possible explanations could be the ease of interacting with the site, responding to items by just clicking a box, or perhaps the fact that the Internet presentation elicited more interest, therefore, causing respondents to be more attentive and responsive.

Examiner time represents the amount of time spent by the principal investigator on unique aspects of administration and data collection. Once again, differences were observed in the total amount of unique time spent of the different methods. While traditional NHST analyses could not be conducted due to the manner in which the data were collected, it is apparent that the outlier effect of the TAQ examiner time would cause the analyses to demonstrate differences among the methods. This large amount of time takes into account the time spent administering the interview (i.e., same amount of time as the respondent completion time), plus other aspects such as coding and data entry. The other three methods

are quite similar. The Postal-SAQ took a little more time due to the difficulty in entering data off of a multiple page questionnaire. The Internet-SAQ required a lower amount of time than the other formats because data was received from the website in a usable format and did not require data entry or coding. The self-administered nature of the Postal-SAQ, E-mail-SAQ, and the Internet-SAQ dramatically decreased the amount of examiner time, unlike the TAQ, which requires that the examiner put in at least as much time as the respondent to obtain the answers via the interview format. Results suggest that the Internet-SAQ method requires the lowest amount of examiner time overall.

While the Internet-SAQ demonstrates the lowest amounts of respondent and examiner time, the E-mail-SAQ was by far the method with the lowest monetary cost overall. Unlike the other methods, the E-mail-SAQ utilized a free medium in which to deliver the SHS. There were no unique postage costs as was the case in the Postal-SAQ, there were no long distance fees incurred by the principal investigator as was the case in conducting the TAQ, and there were no membership or security fees as was the case with the Internet-SAQ on Survey Monkey. The lack of any unique costs sets the E-mail-SAQ as the cheapest administration overall. At $2.07 per response, the Postal-SAQ stands out as the method with the highest total of unique expenses with two forms of postage (i.e., initial and return delivery charges), SHS reproduction costs, and envelope costs. It is safe to say that the Postal-SAQ is becoming obsolete in terms of total cost when compared to the other methods that were a quarter of the total cost per response. At fifty-four cents per response, the Internet-SAQ was very close to the overall cost per response of the TAQ; however, these costs could be erased with some knowledge about web page development. The money spent per response for the Internet-SAQ was solely due to a monthly membership fee for the

Survey Monkey website, as well as an additional level of security protection to help insure that responses would not be "hacked." However, it is the case that a survey could be developed through web page publishing programs if an investigator had knowledge of different programming languages. This, coupled with a free web hosting source (e.g., university network), would decrease the price per response to almost nothing but would also increase the total amount of examiner time per response due to time to create the survey. While the opportunity costs need to be explored for Internet administration for each investigator, it is the case that with the appropriate knowledge and experience, an examiner could take on this endeavor and do so quickly and without much, if any, financial cost.

Finally, the speed at which responses are received may also affect whether a particular assessment method is chosen. In this study, the differences in the receipt of completed responses are somewhat expected due to differences among the methods, but they are also quite staggering. Postal-SAQ responses were expected to be delayed due to delivery and processing. TAQ responses were expected to be slow and steady since the rate of responding was dependent upon the principal investigator and the number of phone calls that were made. However, the speed at which the E-mail- and Internet-SAQ responses were received was quite shocking. More than half of the responses from both methods were received on the first day. Further, after the second day, both administration methods were approaching 70% of the total responses for the study, and not a single Postal-SAQ had yet to be even *delivered* to the respondents. The ability for the technological methods to obtain completed responses at that rate is a strong factor in regards to the turnaround time for a study. Having the ability to gather the vast majority of your responses in only two days provides a lot of research freedom. Not only can one turn around a study that much more

quickly, but it also frees up the examiner's time from other tasks that are associated with the other administration methods (i.e., screening, presenting to classes/groups, interviewing).

Implications of Findings

While the results vary in regards to statistically demonstrated differences or equivalency, there does appear to be ample support for the use of technological methods of assessing high-risk sexual behavior. Many of the high-risk sexual behavior items demonstrated equivalent or more socially unacceptable responses in the technological conditions. In addition, item and unit response rates were comparable amongst the experimental groups, as was perceived intrusiveness. Method enjoyment and preferred choice of method upon readministration favored the more technological methods. This subjective response by the respondents appears to support the fact that participants, when given the option of technological methods, may be more likely to complete the measure. These trends were observed in unit response rate analysis; however, statistically significant differences were not found. Perhaps the results that lend the most support for the use of technological methods are those associated with the use of resources. The fact that the technological methods tended to be cheaper, used less experimenter and respondent time, and acquired completed responses immediately or in a very short time frame is an enormous boon. Financial resources are frequently limited in research and require a lot of time and effort to obtain; therefore, the reduced cost of these methods is a huge benefit as long as the research does not suffer. In addition, it is often the case that "time is of the essence" and can be much more costly to give up than financial resources. The lower total time use for both parties involved, as well as the swiftness of receiving completed responses, lends an enormous amount of support for the technological methods. In addition, faster turnaround,

ease of data entry and analysis, and novelty all are factors that cannot be ignored with the technological methods.

Through these results, it appears that the relatively new administration methods of e-mail and Internet questionnaires are comparable to other forms of long-distance administration methods in terms of acquiring high-risk sexual behavior data. This suggests that the eventual shift of the field to these methods is not only appropriate but may bring desirable results. While it may be possible that more accurate responding, higher item and unit completion rates, and higher respondent enjoyment will be observed, the fact that there are clear discrepancies in the use of resources will be cause enough for many researchers in the field to begin implementing this form of data acquisition. With the ability to target populations with a significant reduction in total resources used, it is possible that a clearer picture of high-risk sexual behavior may be obtained due to more prolific assessment of high-risk groups. This data would be useful in the development of educational programs in schools that demonstrate undesirable levels of high-risk sexual behaviors and community programs in areas where high-risk sexual behaviors are posing a significant problem.

Finally, another implication of these results is the apparent usefulness of pre-screening respondents prior to inclusion. Overall, the response rates for this study were higher than those of other studies using similar assessment methods. Many factors could have played a role in these high response rates; however, the inclusion of a pre-screening in the methodology allowed the opportunity for the principal investigator to introduce the study in person and inform all potential participants what was to be expected of them. This is quite different from other studies in which the e-mail or Internet survey was either open for the general public to access or directions were mass mailed to large groups of available

individuals (Mustanski, 2001; Riva et al., 2003). Therefore, this methodology might be preferable when wanting to obtain data from an accessible target group or population.

Limitations of the Study

One of the primary limitations of this study is the addition of the TAQ method in the comparisons. While the TAQ method is one of the major forms of long-distance survey administration in the past 40 years, it holds many unique qualities that make it quite different from the other three assessment methods. The interview-like format causes there to be many inherent differences when compared to the self-administered formats. Some of these differences caused the TAQ to look quite favorable when compared to the others (i.e. unit response rate), while others caused the TAQ to appear barely usable (i.e., respondent readmininstration choice). In addition, the principal investigator's recording of the administration time in the TAQ condition is methodologically different than the estimates that the respondents of the other three groups were asked to provide. Nonetheless, the addition of the TAQ to this study appears to have, at times, clouded the results with an outlier.

Another limitation of this study is the use of a measure that lacks validity and reliability research. While the SHS was created with items taken from validated and reliable measures, it still is the case that validity and reliability have not been established for this combination of items.

Also inherent to using a self-administered questionnaire is the reliance on retrospective self-report data. This questionnaire relied upon the respondents' abilities to recall the memories that the items were addressing. While some data (i.e., age, pregnancy, AIDS/HIV/STDS) may have high levels of accurate recall, others (i.e., number of partners,

frequency items) are subject to inaccurate recalls and different types of respondent bias (e.g., rounding, social desirability). The lack of any form of memory or recall cues is also a limitation of this study. As demonstrated in the aforementioned literature, memory and recall cues that help direct respondents to report behavior frequency over a select time period can be effective (Kauth et al., 1991; Patten, 1998; Schroder et al., 2003; Weinhardt, Forsyth, Carey, Jaworski, & Durant, 1998b). While the purpose of this study was to obtain frequency behavior over the lifetime, it is the case that some level of accuracy was discarded in making this decision.

The target population is also a limitation of this study. While college students were the target for this study, only students from a medium-sized Midwestern, urban university were assessed. This inhibits generalizability to other college populations from other areas of the country. It may also be the case that the urban setting of this study in a rather liberal area may provide results that are quite different than the same study conducted at a university in a more suburban or rural area, as well as one in a more conservative area of the country. In addition, these results are only representative of individuals born and/or raised in the United States or Canada. This further limits the generalizability of the results to international students or students who were raised in other countries for significant portions of their lives. It is also the case that the target population is a relatively computer savvy group. The vast majority of college students are required to be familiar with, and have access to, computers in order to successfully navigate a college education. It is very likely that if this study were targeted toward an older population, one would see more problems due to a lack of computer and Internet literacy, as well as computer/Internet accessibility. Another problem with computer accessibility is the inability to target populations in which the most risky sex is

occurring (e.g. lower socioeconomic status, homeless, high school dropouts). The demographic data point to further limitations with this population. By targeting students in introductory psychology classes, the trend is for younger and more inexperienced college students. Since this study occurred during the fall semester and introductory psychology is a mandated class in the university curriculum, the demographic data support the consistent trend of these classes being composed of primarily young, first-semester college students. This limits the generalizability of these results to even the university population due to these factors. Not only is this population inexperienced educationally, but also it is quite likely that they are inexperienced socially and sexually. This may help support the low rates of reported homosexuality and bisexuality, as well as low rates of sexually transmitted infections. Identifying oneself as homosexual and bisexual is a developmental process, and it may be the case that many of these students have not undergone this process as of yet. In addition, lack of sexual experience in a college setting may account for the lower reports of STIs.

The reliance of three of the methods on literacy is also a limitation. Literacy was necessary for completion in this study if placed in the Postal-SAQ, E-Mail-SAQ, or the Internet-SAQ. While it is assumed that the target population was literate, it may be the case that some limitations in this area (i.e. dyslexia, English as a second language) may have affected results.

A final limitation is the reliance on other factors for the delivery of the questionnaires. Non-responder data demonstrates a failure to receive the SHS as the primary reason for failure to respond to the survey (i.e., 11 of 24 responses). While the number of non-responder surveys is quite low in relation to the actual number of non-responders, it is

still the case that almost half of those who responded to it indicated as such. Also, accounting for the other possibilities, only 6 of the 24 responses were related to actual choices or mistakes by the respondent (i.e., forgot to send back, no longer interested, and feeling of invaded privacy). This leaves 75% of the non-responders indicating possible delivery failure to blame. Analysis of the delivery means demonstrates that only the TAQ delivery was directly reliant upon the principal investigator. The E-mail-SAQ and Internet-SAQ relied upon numerous factors, including computer servers, Internet access, and reliability of the computer that the participant was using. The Postal-SAQ is perhaps the most reliant upon the "human factor." Not only are there numerous people handling each piece of mail at the USPS, the "human factor" is in play with both the delivery to participant and also the return to the principal investigator.

Future Directions

The results from this study appear to suggest the utility of Internet technology for the assessment of high-risk sexual behavior and demonstrate support for further research in this area. Results support further exploration into the utility of technological assessment methods in the acquisition of high-risk sexual behavior data. One possibility is administering a validated and reliable HRSB measure via technological means to compare the obtained results to those acquired via more traditional means. While the SHS is a thorough HRSB measure unlike others in the field, it would be beneficial to validate it and determine its level of reliability. With this information, the SHS may gain more widespread use and provide researchers with a more in-depth measure for the exploration of high-risk sexual behaviors.

In addition, targeting only college students limits the generalizabilty of these results to younger populations. While high-risk sexual behavior research can benefit the college

student population, targeting students during their earlier academic years may be more beneficial in developing vital educational programs. In addition, by targeting students during the middle or high school years, the problems of selection bias attributed to targeting only college students would be minimized.

Further exploration of the items on the SHS is warranted. While the SHS was developed to be a thorough HRSB measure, it is likely the case that the items elicited specific reactions from respondents. In this study, there was not an option for respondents to comment on the structure and/or content of the SHS. While a pilot study was conducted to help address some of the issues on the SHS, only 30 people participated in the pilot study, and many did not offer an extensive array of comments or suggestions.

While the use of equivalency analyses can be helpful in determining the similarity between groups, it may not be as useful to couple it with traditional NHST methods. The divergence in the information provided can be confusing at times and lead to the appearance of a lack of significant findings, particularly if the two methods provide non-complementary results. It is also the case that future research with equivalency analyses attends to the sensitivity of the confidence interval approach for items with very low means. As in this study, a lack of equivalency would be found even if the group means differed by only one hundredth of a point due to the very low means of the item in question. This may also be attributed to the reliance of the equivalency analyses on only one item. It is likely that using equivalency analyses on a group of item responses used to form a scale or measure would reduce the sensitivity.

Technologically speaking, the results of this study could be used to add additional factors to an Internet questionnaire. By using audio files, a respondent could click on a link

that would access a recorded reading of the question. This would help in situations where a student struggles with reading or is better able to comprehend information presented aurally.

As mentioned in the literature review, the flexibility of technology could allow for the addition of reminder cues in the form of audio files, calendars and/or a list of important dates for the target population (i.e., date of the start of school). These could help jog the memory of some respondents in order to provide more accurate results.

It is apparent that research in the acquisition of high-risk sexual behavior data is an ongoing process. With the advent of the Internet and other technologies, the opportunities for conducting low resource studies with large target populations are endless. Also, the apparent addition of favorable factors associated with technological means (i.e., increased sense of anonymity, faster completion times) suggests even more accurate results. While it appears that the Internet is here to stay, it is also the case that technology will continue to advance. In so doing, we will likely find in the future even better technological advancements that will benefit the area of obtaining valid and reliable high-risk sexual behavior data.

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Appendix A

Screening Questionnaire

The initial phase of this study consists of the completion of a screening questionnaire. This questionnaire will be used to gather more information about you and to obtain contact information so that you may be reached for the next phase. **PLEASE ANSWER ALL OF THE QUESTIONS** so that you may be considered for this study. Also, remember to write clearly so your answers can be understood. Thank you in advance for your participation in this important study.

1. Name (please print): _____

2. Age: _____

3. Psychology Instructor: _____

4. Days and Time of Class (e.g. TTh 8-9:15am): _____

5. Year in School (check one):

   _____Freshman _____Sophomore _____Junior _____Senior

6. What best describes your current living situation (check one):

   _____On-campus, EMU residence hall
   _____On-campus, EMU university apartment
   _____Apartment/house within 5 miles of EMU campus (no parents/guardians)
   _____Apartment/house over 5 miles from EMU campus (no parents/guardians)
   _____With parents/guardians

7. Were you born **AND** raised in the United States or Canada?

   _____Yes _____No

8. Do you have difficulty hearing on the telephone?

   _____Yes _____No

9. Please list your mailing address. If you live on campus, please use your campus address.

_____

Street Address Apt.

_____

City State Zip Code

10. Please list your telephone number(s). If you live on campus, please include this telephone number.

Primary: (_____) _____ - _____

Secondary: (_____) _____ - _____

11. If contacted by telephone, what days and times would be the best to reach you? Please list as many as possible. _____

_____

_____

_____

_____

12. Please list your e-mail address(es). If possible, please list your EMU email address.

_____@_____

_____@_____

<u>Please make sure you have completed all 12 items on the questionnaire</u>.
As a reminder, this information will remain confidential. This information will only be used to send you the questionnaire, to inform your instructor of your participation for extra credit, and to notify those who win prizes. During data collection, this information will be stored separately from your questionnaire responses and once all data is collected, it will be destroyed. As a reminder you can discontinue participation at any time after this point without consequence. Thank you again for your participation

Appendix B

Sexual History Survey (SHS)

Subject ID Number _____

Sexual History Survey

(Insert Directions Here)

1. Gender

   _____ Male
   _____ Female

2. How old are you?

   _____ years old

3. How many semesters of college education do you have? (check only one):

   _____ 0
   _____ 1-2
   _____ 3-4
   _____ 5-6
   _____ 7 or more

4. Are you in a fraternity or sorority?

   _____ Yes, I am in a fraternity or sorority
   _____ No, I plan on rushing/joining a fraternity or sorority
   _____ No, I am not in a fraternity or sorority and do not plan on joining one

5. What best describes your current living situation? (check only one):

   _____ On-campus, EMU residence hall
   _____ On-campus, EMU university apartment
   _____ Apartment/house within 5 miles of EMU campus (no parents/guardians)
   _____ Apartment/house over 5 miles from EMU campus (no parents/guardians)
   _____ With parents/guardians

6. What best describes your ethnic or cultural identity? (check only one):

_____ Caucasian/White American
_____ African/Black American
_____ Native/Indigenous American
_____ Asian/Pacific Islander
_____ Latino/Hispanic
_____ Other (please indicate) _____

7. How often do you attend religious services? (check only one):

_____ Several times a week
_____ Every week
_____ Nearly every week
_____ 2-3 times a month
_____ About once a month
_____ Several times a year
_____ Once or twice a year
_____ Less than once a year
_____ Never

8. Which sexual orientation do you most identify with? (check only one):

_____ Heterosexual
_____ Homosexual
_____ Bisexual

9. Which of the following **BEST** describes your current relationship status? (check only one):

_____ Single; not dating
_____ Single; dating only one person
_____ Single; dating two or more people
_____ Engaged
_____ Married
_____ Divorced

10. As a CHILD, did you experience sexual touching, attempted sexual penetration, and/or sexual penetration (oral, vaginal, anal) against your will?

_____ Yes
_____ No

11. As an ADULT (18 years old or older), have you experienced sexual touching, attempted sexual penetration, and/or sexual penetration (oral, vaginal, anal) against your will?

    _____ Yes
    _____ No

12. Have you ever been pregnant or has a sexual partner of yours ever been pregnant with your child?

    _____ Yes
    _____ No

13. Have you ever been diagnosed with HIV/AIDS or a sexually transmitted disease (e.g. syphilis, gonorrhea, chlamydia, genital warts, genital herpes, etc.)?

    _____ Yes
    _____ No

14. How old were you when you performed oral sex on another person for the first time? (Leave blank if you have never engaged in this behavior.)

    _____ years old

15. During your life, on how many people have you performed oral sex? (Leave blank if you have never engaged in this behavior.)

    _____ people

16. How often do you use a latex condom or a dental dam when performing oral sex? (Leave blank if you have never engaged in this behavior.)

    _____ Never (0% of the time)
    _____ Rarely (under 25% of the time)
    _____ Sometimes (25-74% of the time)
    _____ Often (75-99% of the time)
    _____ Always (100% of the time)

17. How old were you when you received oral sex for the first time? (Leave blank if you have never engaged in this behavior.)

    _____ years old

18. During your life, from how many people have you received oral sex? (Leave blank if you have never engaged in this behavior.)

    _____ people

19. How often is a latex condom or a dental dam used when you receive oral sex? (Leave blank if you have never engaged in this behavior.)

    _____ Never (0% of the time)
    _____ Rarely (under 25% of the time)
    _____ Sometimes (25-74% of the time)
    _____ Often (75-99% of the time)
    _____ Always (100% of the time)

20. How old were you when you had vaginal sex for the first time? (Leave blank if you have never engaged in this behavior.)

    _____ years old

21. During your life, with how many people have you had vaginal sex? (Leave blank if you have never engaged in this behavior.)

    _____ people

22. How often do you and your partner(s) use a latex condom during vaginal sex? (Leave blank if you have never engaged in this behavior.)

    _____ Never (0% of the time)
    _____ Rarely (under 25% of the time)
    _____ Sometimes (25-74% of the time)
    _____ Often (75-99% of the time)
    _____ Always (100% of the time)

23. How old were you when you had anal sex for the first time? (Leave blank if you have never engaged in this behavior.)

    _____ years old

24. During your life, with how many people have you had anal sex? (Leave blank if you have never engaged in this behavior.)

    _____ different people

25. When having anal sex, how often do you or your partner(s) use a latex condom? (Leave blank if you have never engaged in this behavior.)

    _____ Never (0% of the time)
    _____ Rarely (under 25% of the time)
    _____ Sometimes (26-75% of the time)
    _____ Often (76-99% of the time)
    _____ Always (100% of the time)

26. During your life, have you ever exchanged (given or received) food, shelter, money, or drugs for sex (e.g. oral, vaginal, or anal)?

    _____ Yes
    _____ No

27. How frequently do you engage in sex (e.g. oral, vaginal, anal), while under the influence of alcohol? (Leave blank if you have never engaged in this behavior.)

    _____ Never (0% of the time)
    _____ Rarely (under 25% of the time)
    _____ Sometimes (25-74% of the time)
    _____ Often (75-99% of the time)
    _____ Always (100% of the time)

28. How often do you engage in sex (e.g. oral, vaginal, anal), while under the influence of drugs? (Leave blank if you have never engaged in this behavior.)

    _____ Never (0% of the time)
    _____ Rarely (under 25% of the time)
    _____ Sometimes (25-74% of the time)
    _____ Often (75-99% of the time)
    _____ Always (100% of the time)

PLEASE COMPLETE THE FOLLOWING QUESTIONS ABOUT THE SURVEY AND SURVEY FORMAT BY CHECKING ONLY ONE OF THE ITEMS.

29. How private or anonymous do you feel this survey is? (check only one):

_____ Very private
_____ Somewhat private
_____ Neither private nor non-private
_____ Somewhat non-private
_____ Very non-private

30. Was anybody else present when you were taking this survey?

_____ Yes
_____ No

31. How much did you enjoy completing a survey in this format? (check only one):

_____ Very enjoyable
_____ Somewhat enjoyable
_____ Neither enjoyable nor unenjoyable
_____ Somewhat unenjoyable
_____ Very unenjoyable

32. If you could take this survey again, which format would you prefer? (check only one):

_____ Paper-and-pencil survey delivered in the mail
_____ Telephone survey
_____ Survey sent by e-mail
_____ Internet survey

33. Approximately how long did it take you to complete this survey?

_____ minutes

Please check to make sure that you have answered all 33 items. If this survey has caused you stress, anxiety, or made you uncomfortable in any way, please contact Counseling Services at Snow Health Center (734) 487-1118 or the EMU Psychology Clinic at (734) 487-4987 to discuss these feelings with a counselor.
Thank you again for your participation

Appendix C

SHS Directions – Postal-SAQ Administration

The following survey consists of 33 questions pertaining to sexual experiences during your lifetime. Place a check mark (√) next to the best response for each item. There will also be questions asking you for an age or a number. Please write your response in the space provided. If you do not know the exact answer to a question, give your best approximation. Please answer all 33 items truthfully and write your responses clearly and neatly. When you are finished, please place the questionnaire in the addressed and stamped envelope provided and place it in the mail. Thank you in advance for your participation.

Appendix D

SHS Directions/Script – TAQ Administration

Hello is _____ there?

My name is Trevor Grice, and I am the principal investigator in the study you volunteered for earlier this semester. Are you still interested in participating?

If possible, find a private setting to answer these questions.

Is the connection on your phone good?

Can you hear me well?

Okay, let's get started then.

The following survey consists of 33 questions pertaining to sexual experiences during your lifetime. I will read each question and the available responses. Please pick the best response for each item. I will also be asking questions that ask for an age or a number. Please state your numeric responses clearly. If you do not know the exact answer to a question, please give your best approximation. Please answer all 33 items truthfully and speak as clearly as possible. I will repeat a question and the available responses if you do not understand the first time. However, I will not be able to explain what the questions mean. There is a definition sheet available that I will read if you do not understand what a word means.

Do you understand these directions?

Would you like me to repeat them?

Appendix E

SHS Directions – E-mail-SAQ Administration

The following survey consists of 33 questions pertaining to sexual experiences during your lifetime. To complete the survey, use the "reply to sender" function on your e-mail browser, then type in your responses to the items. Designate your response by placing an "X" next to the one item that best fits your response. There will also be questions asking you for an age or a number. Please type your response after the question. If you do not know the exact answer to a question, please give your best approximation. If you do not understand the meaning of a word, refer to the definition sheet at the end of the message. Please answer all 33 items truthfully and only provide information that is necessary to answer the question. Also, if possible, complete this survey in a private setting.

Appendix F

SHS Directions – Internet-SAQ Administration

The following survey consists of 33 questions pertaining to sexual experiences during your lifetime. Use the browser to pick the best response for each item. If you do not know the exact answer to a question, please give you best approximation. If you do not understand the meaning of a word, click on the "definitions" link at the top of the page. Please answer all 33 items truthfully and if possible, in a private setting.

Appendix G

Definition sheet for the Sexual History Questionnaire

Intrusive -	Tending to intrude upon; especially privacy
Sex -	If not specified, sex refers to oral sex, vaginal intercourse, and anal intercourse.
Heterosexual -	Sexually attracted to individuals of the opposite gender
Homosexual -	Sexually attracted to individuals of the same gender
Bisexual -	Sexually attracted to individuals of both genders
Penis -	Male sex organ. Also referred to as "cock," "dick," and "pecker."
Vagina -	Female sex organ. Also referred to as "pussy," "crotch," and "beaver."
Anus -	Orifice or body cavity from which solid waste is excreted from the body. Also referred to as the "ass," "butt," and "rectum."
Latex Condoms -	Typically refers to a latex rubber protection that is placed over the penis. Also refers to a female latex rubber protection that is placed inside of the vagina. Also called "rubbers." Plastic bags and condoms made from animal skin are not included in this definition.
Dental Dam -	Flat piece of latex rubber used as a barrier between the mouth and penis, vagina, and/or anus during oral sex.
Oral Sex -	Using your mouth and/or tongue to touch your partner's penis, vagina, and/or anus.
Vaginal Intercourse -	Either putting your penis in your partner's vagina or having your partner put his penis in your vagina.
Anal Intercourse -	Either putting your penis in your partner's anus or having your partner put his penis in your anus.

Appendix H

Pilot Questionnaire Additional Questions

The next seven questions ask about the previous 33 questions. Please provide any information that you can to assist in the development of this survey. Thanks.

34. How did you feel about the length of the survey?

_____ Too long
_____ Just right
_____ Too short

35. Were the directions easy to understand?

_____ Yes
_____ No

If not, Why? _____

36. Did you find any of the questions difficult to read or understand?

_____ Yes
_____ No

If so, which ones? _____

37. Did you find any of the questions inappropriate?

_____ Yes
_____ No

If so, which ones? _____

38. Did you notice any spelling or grammatical errors?

_____ Yes
_____ No

If so, where? _____

39. Was the definition sheet helpful?

_____ Yes
_____ No

If not, Why?_____

40. If you were to be entered into a prize drawing with a chance to win a television or stereo, in addition to extra credit from your instructor, would you be more willing to participate in this survey?

_____ Yes
_____ No

If not, Why?_____

Are there any other comments or concerns with the above survey? If so, please indicate on the lines below. Your feedback is very valuable and greatly appreciated.

_____

_____

_____

_____

_____

_____

_____

Thank you for your participation and your feedback

Appendix I

Sexual History Survey Non-Respondent Follow-up

I realize that there are many reasons why a person is unable to complete a survey that he or she had initially agreed to complete. As a person who agreed to take part in the Sexual History Survey, I would appreciate it if you would check any of the statements below that led to your inability to complete the Sexual History Survey. Thank you in advance for any information that you can provide.

Trevor A. Grice, M. S.
Principal Investigator

Please indicate which of the following statements best describes the circumstances that led to your inability to complete the Sexual History Survey (mark all that apply).

____ I completed the Sexual History Survey and sent it back.
____ I completed the Sexual History Survey, but forgot to send it.
____ I forgot to complete the Sexual History Survey.
____ I no longer wanted to participate in the study.
____ I did not receive the Sexual History Survey.
____ I could not open the e-mail containing the Sexual History Survey.
____ I could not access the website containing the Sexual History Survey.
____ I could not get in contact with the principal investigator to complete the Sexual History Survey over the phone.
____ The Sexual History Survey made me uncomfortable.
____ I felt that the Sexual History Survey invaded my privacy.
____ I felt that the items in the Sexual History Survey were too graphic.
____ I did not understand some of the questions in the Sexual History Survey.
____ I could not read the Sexual History Survey.
____ I lost the original copy/e-mail of the Sexual History Survey and was too embarrassed to ask for another copy/e-mail.

Appendix J

Project Introduction Script

Hello, my name is Trevor Grice and I am a Doctoral Candidate here at Eastern Michigan University. I am here today to ask for your participation in a study about sexual behaviors. At this time, the informed consent form is being passed around. Please take this time to go over the informed consent form.

As you can see, the primary benefit expected from this research is a better understanding of high-risk sexual behaviors. Knowledge in this area may lead to a better understanding of sexual decision-making and help explain the increase in rates of teenage pregnancy, sexually transmitted diseases, and HIV/AIDS. In addition, participants will receive extra credit from their instructor and be entered for a chance to win either a $100 gift card to Meijer or one of five $20 gift cards to Meijer.

Before agreeing to take part in this study, please be aware that:

Taking part in this study is completely voluntary. It is not required as part of any course and you have the right to discontinue at any time without any negative consequences or prejudice from myself or the course instructor. If you choose to discontinue participation, you may receive a brief, anonymous questionnaire to gather information as to why you discontinued.

Participation in this study will consist of two phases. The first phase is the completion of a screening questionnaire, which I will hand out momentarily. This screening questionnaire will ask you some basic demographic questions and ask you to provide your name, address, telephone number and e-mail address. If you choose to participate, please provide **ALL** forms of contact information. This information will be kept confidential and is necessary to deliver the questionnaires, inform your instructor about extra credit, and deliver prizes at the end of the study. It is important that if you choose to participate that you provide all forms of contact information.

In Phase 2, you will be asked to complete a 33-item questionnaire that will take about 15-20 minutes and will include specific questions about your sexual history. It is important that you answer these questions truthfully and to the best of your knowledge in order to provide accurate data. This questionnaire will be administered in about 2-4 weeks.

Confidentiality will be maintained throughout this study. Your responses will **NOT** be part of your record here at EMU in any way. Also, your results will not be provided to your instructor. He or she will only be informed of participation for extra credit purposes. Your responses will be kept separate from your contact information and you will only be identified by a subject number. Upon completion of data collection and administration of prizes and extra credit, all contact information will be destroyed and your responses will no longer be able to be connected to you.

Results may be disseminated at conferences or in scholarly journals; however no individual data will be reported. All data will be reported in group form. If you would like a copy of the results when they become available, please contact the principal investigator at the information below.

The foreseeable risks or ill effects resulting from participation in this study are minimal. There is a remote possibility that answering some of the questions on the questionnaire may evoke some feelings of anxiety or feel like an invasion of your privacy. Should you experience any of these feelings, there are on-campus counseling services available to you free of charge at EMU Counseling Services, (734) 487-1118 and for a small fee EMU Psychology Clinic (734) 487-4987.

This research protocol has been reviewed and approved by a faculty committee and by the EMU Human Subjects Review Committee. For more information about the Human Subjects Review Committee and/or the review process for this study, contact the individuals listed.

Are there any questions?

If you have any questions afterwards feel free to contact me with the information provided at the bottom of the page.

The next page is the signature form that indicates that the study has been explained to you and that all of your questions have been answered. It also indicates that you have read the

description and are aware of the potential risks involved. It also informs you of your right to request a copy of this consent form. If you agree with all of the following please sign and date the form. Feel free to tear off the first page of the informed consent for and keep it for your records.

If you agree to participate in the study, please make sure you sign and date the informed consent form and complete the entire screening questionnaire. When you are finished, please place the completed signature page of the informed consent form and the screening questionnaire in the box at the front of the class.

Thank you for your time and in advance for your participation.

Appendix K

Informed Consent Form

INFORMED CONSENT
DEPARTMENT OF PSYCHOLOGY
EASTERN MICHIGAN UNIVERSITY

With the growing epidemic of HIV/AIDS over the past 25 years, research has focused on developing methods to reduce the number of people contracting the disease. Of those afflicted, 24% are between the ages of 13 to 24 years of age (Centers for Disease Control and Prevention, 2002). Due to the incubation period of the virus, it is safe to assume that many of these individuals are contracting HIV early in their life and most likely through sexual contact (Turner et al., 1998).

The primary benefit expected from this research study is a better understanding of factors that influence why young adults engage in high-risk sexual activity. Knowledge in this area will lead to a better understanding of sexual decision-making and in the development of intervention programs. Benefits for participants include extra credit from your instructor and a chance to win either a $100 prize or one of five $20 prizes.

Before agreeing to take part in this study, please be aware that:

1. Taking part in this study is **COMPLETELY VOLUNTARY**. It is not required as part of any course and you have the right to discontinue at any time without any negative consequences or prejudice from the principal investigator or course instructor.

2. The study consists of two phases. Phase 1 begins today with the completion of the screening questionnaire. Phases 2 will require you to answer a 33-item questionnaire during this semester. Due to this, contact information will need to be collected via the screening questionnaire in order to contact you later in the study. Participation in this study will not extend past this semester.

3. Confidentiality will be maintained throughout the study. Your responses will **NOT** be part of your record here at EMU in any way. Also, your results will not be provided to your instructor. He or she will only be informed of participation information for extra credit purposes. All identifying information will be erased when data collection is complete, instructors have been notified of extra credit, and prizes have been awarded.

4. Results of this research study may be disseminated at annual conferences in poster or oral presentation form and possibly in an article prepared for a scholarly journal. No individual data will be used in the reporting of results. All data will be reported in group form. If you would like a copy of the results when they become available, please contact the principal investigator.

5. The foreseeable risks or ill effects resulting from participating in this study are minimal. There is a remote possibility that answering some of the questions on the survey may evoke some feelings of anxiety or be interpreted as an invasion of your privacy. Should you experience any of these feelings, there are on-campus counseling services available to you free of charge at EMU Counseling Services, (734) 487-1118 and for a small fee at EMU Psychology Clinic (734) 487-4987.

6. This research protocol has been accepted by a faculty committee and has been reviewed and approved by the Eastern Michigan University Human Subjects Review Committee. If you have any questions on the approval process, please contact either Dr. Patrick Melia or Dr. Steven Pernecky at (734) 487-0379

If you have any additional questions or concerns please feel free to contact the principal investigator or the project chair:

Principal Investigator:	Trevor A. Grice, M.S., T.L.L.P 537 Mark Jefferson Ypsilanti, MI 48197 (734) 487-1622 tgrice@emich.edu	Project Chair:	Norman Gordon, Ph.D., L.P 537 Mark Jefferson Ypsilanti, MI 48197 (734) 487-1155 ngordon1@emich.edu

I, _____ willingly agree to participate in the aforementioned study.
Please Print Name

I have had the study explained to me and my questions have been answered to my satisfaction. I have read the description of this project, am aware of the potential risks involved, and voluntarily give my consent to participate. I also understand that I may request and receive a copy of this consent form to keep for future reference.

_____ _____
Signature Date

Appendix L

Project Initiation Announcement – Postal-SAQ

Dear Participant,

I would like to thank you for volunteering to participate in this study. This postcard/e-mail is to inform you that you will be receiving the Sexual History Survey in the mail in the next couple of days. Please complete it at your earliest convenience. When you are finished, place the completed survey in the addressed and stamped envelope that has been provided. Thank you again for your participation.

Trevor A. Grice, M.S.
Principal Investigator

Appendix M

Project Initiation Announcement – TAQ

Dear Participant,

I would like to thank you for volunteering to participate in this study. This postcard/e-mail is to inform you that I will contact you by telephone sometime in the next couple of weeks in order to complete the Sexual History Survey. Thank you again for your participation.

Trevor A. Grice, M.S.
Principal Investigator

Appendix N

Project Initiation Announcement – E-mail-SAQ

Dear Participant,

I would like to thank you for volunteering to participate in this study. This postcard/e-mail is to inform you that you will be receiving the Sexual History Survey in your e-mail inbox within the next couple of days. Please complete it at your earliest convenience. If you have any problems opening the attachment or viewing the text, contact me at tgrice@emich.edu. Thank you again for your participation.

Trevor A. Grice, M.S.
Principal Investigator

Appendix O

Project Initiation Announcement – Internet-SAQ

Dear Participant,

I would like to thank you for volunteering to participate in this study. This postcard/e-mail is to inform you that you will be receiving an e-mail in the next couple of days with a web address that will allow you access the Sexual History Survey on the Internet. When you receive this email, please complete the survey at your earliest convenience. If you have any problems accessing the survey, please contact me at tgrice@emich.edu. Thank you again for your participation.

Trevor A. Grice, M.S.
Principal Investigator

Appendix P

Reminder Notification – Postal-SAQ

Dear Participant,

This postcard/e-mail reminder is to let you know that I have not yet received the completed Sexual History Survey and to remind you to complete this at your earliest convenience. If you have decided to discontinue participation or have recently placed the questionnaire in the mail please disregard this message. If you have the questionnaire and are still interested in participating, please complete and mail the questionnaire at your earliest convenience. If you do not have the questionnaire and would still like to participate, please e-mail me at tgrice@emich.edu so that another one may be mailed. Thank you again for your participation

Trevor A. Grice, M.S.
Principal Investigator

Appendix Q

Reminder Notification – TAQ

Dear Participant,

This postcard/e-mail reminder is to let you know that I have not been able to contact you by telephone in order to complete the Sexual History Survey you volunteered for earlier this semester. If you have decided to discontinue participation please disregard this message. If you are interested in continuing to participate in this study, please attempt to make yourself available during the times you indicated on the screening questionnaire or e-mail me at tgrice@emich.edu with other times in which you will be available. Thank you again for your participation

Trevor A. Grice, M.S.
Principal Investigator

Appendix R

Reminder Notification – E-mail-SAQ

Dear Participant,

This postcard/e-mail reminder is to let you know that I have not yet received your completed Sexual History Survey through e-mail and to remind you to complete this at your earliest convenience. If you have decided to discontinue participation or have recently sent the questionnaire via e-mail please disregard this message. If you have the questionnaire and are still interested in participating, please complete and mail the questionnaire at your earliest convenience. If you no longer have a copy of the questionnaire, are having trouble opening the attachment, or cannot see the text, please e-mail me at tgrice@emich.edu to request another or troubleshoot the problem. Thank you again for your participation

Trevor A. Grice, M.S.
Principal Investigator

Appendix S

Reminder Notification – Internet-SAQ

Dear Participant,

This postcard/e-mail reminder is to let you know that I have not yet received your responses from the Sexual History Survey and to remind you to complete this survey at your earliest convenience. If you have decided to discontinue participation or have recently completed the questionnaire please disregard this message. If you are still have the initial e-mail with the web address for the survey, please follow that complete the survey. If you did not receive the email with the web address or have deleted that email, please contact me at tgrice@emich.edu and I will forward you the web address. If you have any other questions or are having trouble accessing the survey, e-mail me at tgrice@emich.edu to troubleshoot the problem. Thank you again for your participation.

Trevor A. Grice, M.S.
Principal Investigator

Appendix T

Thank You Letter

Dear Participant,

This postcard/e-mail is to let you know that I have received your completed survey. Your instructor has been notified of your participation and winners of the drawing will be notified in the next couple of weeks. Good luck and thank you again for your participation.

Trevor A. Grice, M.S.
Principal Investigator

Appendix U

Equivalency Analysis Data – Hypothesis 1

Equivalency Data for Item #10

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.39	-0.01 to 0.09	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.39	-0.01 to 0.09	Equivalent
TAQ vs. E-Mail-SAQ	± 0.39	0.00 to 0.10	Equivalent
TAQ vs. Internet-SAQ	± 0.39	0.02 to 0.12	Equivalent
Traditional vs. Technological	± 0.39	-0.02 to 0.10	Equivalent

Equivalency Data for Item #11

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.37	-0.05 to 0.09	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.37	-0.08 to 0.04	Equivalent
TAQ vs. E-Mail-SAQ	± 0.39	0.06 to 0.17	Equivalent
TAQ vs. Internet-SAQ	± 0.39	0.03 to 0.13	Equivalent
Traditional vs. Technological	± 0.38	0.01 to 0.08	Equivalent

Equivalency Data for Item #12

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.33	-0.02 to 0.08	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.39	-0.05 to 0.05	Equivalent
TAQ vs. E-Mail-SAQ	± 0.38	-0.03 to 0.07	Equivalent
TAQ vs. Internet-SAQ	± 0.38	0.06 to 0.04	Equivalent
Traditional vs. Technological	± 0.38	-0.03 to 0.05	Equivalent

Equivalency Data for Item #13

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.38	-0.08 to 0.02	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.39	-0.10 to 0.00	Equivalent
TAQ vs. E-Mail-SAQ	± 0.39	-0.01 to 0.07	Equivalent
TAQ vs. Internet-SAQ	± 0.39	-0.02 to 0.04	Equivalent
Traditional vs. Technological	± 0.39	-0.04 to 0.02	Equivalent

Equivalency Data for Item #14

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 3.30	0.07 to 0.87	Equivalent
Postal-SAQ vs. Internet-SAQ	± 3.30	0.13 to 0.95	Equivalent
TAQ vs. E-Mail-SAQ	± 3.31	0.12 to 0.88	Equivalent
TAQ vs. Internet-SAQ	± 3.31	0.19 to 0.96	Equivalent
Traditional vs. Technological	± 3.30	0.26 to 0.81	Equivalent

Equivalency Data for Item #15

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.77	-1.21 to 1.19	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.77	-1.95 to 0.55	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.57	-1.94 to -0.08	Not Equivalent
TAQ vs. Internet-SAQ	± 0.57	-2.69 to -0.71	Not Equivalent
Traditional vs. Technological	± 0.67	-1.66 to 0.10	Not Equivalent

Equivalency Data for Item #16

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.27	-0.37 to 0.09	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.27	-0.21 to 0.19	Equivalent
TAQ vs. E-Mail-SAQ	± 0.43	0.37 to 0.95	Not Equivalent
TAQ vs. Internet-SAQ	± 0.43	0.52 to 1.06	Not Equivalent
Traditional vs. Technological	± 0.35	0.16 to 0.52	Not Equivalent

Equivalency Data for Item #17

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 3.24	-0.20 to 0.70	Equivalent
Postal-SAQ vs. Internet-SAQ	± 3.24	-0.29 to 0.59	Equivalent
TAQ vs. E-Mail-SAQ	± 3.33	0.31 to 1.09	Equivalent
TAQ vs. Internet-SAQ	± 3.33	0.23 to 0.97	Equivalent
Traditional vs. Technological	± 3.29	0.14 to 0.72	Equivalent

Equivalency Data for Item #18

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.72	-1.26 to 0.66	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.72	-1.22 to 0.42	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.63	-1.64 to 0.16	Not Equivalent
TAQ vs. Internet-SAQ	± 0.63	-0.75 to 1.61	Not Equivalent
Traditional vs. Technological	± 0.67	-1.19 to -0.03	Not Equivalent

Equivalency Data for Item #19

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.22	-0.19 to 0.07	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.22	-0.34 to -0.02	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.29	-0.10 to 0.48	Not Equivalent
TAQ vs. Internet-SAQ	± 0.29	-0.04 to 0.38	Not Equivalent
Traditional vs. Technological	± 0.26	-0.07 to 0.19	Equivalent

Equivalency Data for Item #20

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 3.26	0.32 to 0.40	Equivalent
Postal-SAQ vs. Internet-SAQ	± 3.26	0.34 to 0.40	Equivalent
TAQ vs. E-Mail-SAQ	± 3.35	0.04 to 0.72	Equivalent
TAQ vs. Internet-SAQ	± 3.35	0.10 to 0.80	Equivalent
Traditional vs. Technological	± 3.31	-0.04 to 0.46	Equivalent

Equivalency Data for Item #21

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 1.13	-2.09 to 2.92	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 1.13	-0.73 to 2.39	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.74	-4.55 to -0.27	Not Equivalent
TAQ vs. Internet-SAQ	± 0.74	-2.16 to -0.14	Not Equivalent
Traditional vs. Technological	± 0.92	-2.20 to 0.48	Not Equivalent

Equivalency Data for Item #22

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.76	0.07 to 0.65	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.76	-0.20 to 0.37	Equivalent
TAQ vs. E-Mail-SAQ	± 0.78	0.19 to 0.77	Equivalent
TAQ vs. Internet-SAQ	± 0.78	-0.08 to 0.48	Equivalent
Traditional vs. Technological	± 0.77	0.08 to 0.48	Equivalent

Equivalency Data for Item #23

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 3.60	-1.31 to 1.01	Equivalent
Postal-SAQ vs. Internet-SAQ	± 3.60	-0.84 to 1.29	Equivalent
TAQ vs. E-Mail-SAQ	± 3.83	0.03 to 1.99	Equivalent
TAQ vs. Internet-SAQ	± 3.83	0.41 to 2.35	Equivalent
Traditional vs. Technological	± 3.69	-0.26 to 1.24	Equivalent

Equivalency Data for Item #24

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.33	-1.52 to 0.76	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.33	-1.03 to 0.69	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.28	-1.98 to 0.74	Not Equivalent
TAQ vs. Internet-SAQ	± 0.28	-1.39 to 0.57	Not Equivalent
Traditional vs. Technological	± 0.31	-1.10 to 0.40	Not Equivalent

Equivalency Data for Item #25

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.55	0.25 to 1.69	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.55	-0.38 to 1.02	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.55	0.15 to 1.77	Not Equivalent
TAQ vs. Internet-SAQ	± 0.55	-0.52 to 1.14	Not Equivalent
Traditional vs. Technological	± 0.67	0.06 to 1.13	Not Equivalent

Equivalency Data for Item #26

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.40	-0.01 to 0.05	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.40	-0.01 to 0.03	Equivalent
TAQ vs. E-Mail-SAQ	± 0.40	-0.01 to 0.05	Equivalent
TAQ vs. Internet-SAQ	± 0.40	-0.01 to 0.03	Equivalent
Traditional vs. Technological	± 0.40	0.00 to 0.04	Equivalent

Equivalency Data for Item #27

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.38	-0.31 to 0.09	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.38	-0.12 to 0.24	Equivalent
TAQ vs. E-Mail-SAQ	± 0.34	-0.13 to -0.51	Not Equivalent
TAQ vs. Internet-SAQ	± 0.34	0.09 to 0.45	Not Equivalent
Traditional vs. Technological	± 0.36	-0.33 to -0.07	Equivalent

Equivalency Data for Item #28

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.26	0.22 to 0.10	Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.26	-0.20 to 0.06	Equivalent
TAQ vs. E-Mail-SAQ	± 0.22	-0.35 to -0.09	Not Equivalent
TAQ vs. Internet-SAQ	± 0.22	-0.34 to -0.12	Not Equivalent
Traditional vs. Technological	± 0.24	-0.06 to 0.24	Not Equivalent[1]

[1] Exact Equivalency Interval is 0.238 and exact upper end of Confidence Interval is 0.244

Appendix V

Equivalency Analysis Data – Hypothesis 2

Equivalency Data for Response Rate of Demographic Items

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.00	0.01 to 0.03	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.00	-0.04 to 0.04	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.00	-0.01 to -0.06	Not Equivalent
TAQ vs. Internet-SAQ	± 0.00	-0.04 to 0.02	Not Equivalent
Traditional vs. Technological	± 0.00	-0.03 to 0.00	Not Equivalent

Equivalency Data for Response Rate of High-Risk Sexual Behavior Items

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.08	0.06 to 0.40	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.08	-0.14 to 0.32	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.00	-0.29 to 0.13	Not Equivalent
TAQ vs. Internet-SAQ	± 0.00	-0.39 to -0.17	Not Equivalent
Traditional vs. Technological	± 0.04	-0.19 to 0.05	Not Equivalent

Equivalency Data for Response Rate of Feedback Items

Comparison	Equivalency Interval	Confidence Interval	Equivalency Status
Postal-SAQ vs. E-Mail-SAQ	± 0.00	-0.04 to 0.02	Not Equivalent
Postal-SAQ vs. Internet-SAQ	± 0.00	-0.09 to 0.03	Not Equivalent
TAQ vs. E-Mail-SAQ	± 0.00	-0.05 to 0.01	Not Equivalent
TAQ vs. Internet-SAQ	± 0.39	-0.08 to 0.02	Not Equivalent
Traditional vs. Technological	± 0.00	-0.06 to 0.00	Not Equivalent